THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXI. SATURDAY, SEPTEMBER 3, 1892. NO. 10.

ORIGINAL ARTICLES.

THE TREATMENT OF EXPERIMENTAL TUBERCULOSIS BY KOCH'S TUBERCULIN, HUNTER'S MODIFICATION AND OTHER PRODUCTS OF THE TUBERCLE-BACILLUS.[1]

BY EDWARD L. TRUDEAU, M.D.,
OF SARANAC LAKE, NEW YORK.

ALTHOUGH several attempts at preventive inoculation against tuberculosis had already been made by experimenters, the possibility of curing the existing disease by injections of products derived from the tubercle-bacillus itself originated with Dr. Robert Koch, and the gigantic human experiment that followed and resulted in so much inevitable disappointment is still fresh in the public as well as the professional mind.

The hopes to which tuberculin gave rise were entirely founded on Koch's observations of the curative influence said to be exercised by this substance upon experimental tuberculosis in the guinea-pig. In the general haste to determine its efficacy in the human subject, the study of its effects upon tuberculous animals has as yet received but little attention, and Koch himself has never given more than the most meager details of his observations relating to this most important question.

It is quite evident, however, that if products derived from the tubercle-bacillus have no beneficial influence upon the artificially-produced disease in animals, there is little reason for continuing laboratory experiments of a tentative nature on the human subject, and research must take a new direction; while, on the other hand, if these bacterial products can be demonstrated to control, to any appreciable extent, the development of experimental tuberculosis, a reasonable hope may be entertained that by perfected methods and a more exact and extended knowledge of the various complex substances produced by germ-life, the ravages of the disease in the human subject may yet be brought under control.

Moreover, the work of Hunter and the claims of Klebs would also indicate the possibility of obtaining a product, free from the dangers of tuberculin, yet capable, if not of curing the disease, at least of exercising a marked beneficial influence upon its course, and some evidence as to the remedial efficacy as well as the dangers of these various products, as noted in animals, would tend to place our knowledge on a firmer basis, strengthen our convictions and guide us to a more intelligent application of these substances to the treatment of tuberculosis in man.

The present research has been undertaken, therefore, with a view to obtaining some more definite evidence—first, as to the curative effect said to be exercised by Koch's tuberculin upon inoculated guinea-pigs; second, as to the curative value and dangers in experimental tuberculosis of the modifications of tuberculin proposed by Hunter.

Furthermore, leaving to the distinguished chemists who have undertaken it the study and separation of the various elements, remedial and injurious, contained in Koch's tuberculin, I have attempted, by an application of the eliminative process, to demonstrate, by a few simple experiments, in which part of liquid cultures of the tubercle-bacillus the remedial element resides—whether in the bacterio-protein of which the bacilli are composed, or in the albumoses and soluble toxines produced in artificial culture-media as the result of their life-history.

Treatment with Koch's Tuberculin.

The description of experiments will be made as brief as is compatible with accuracy. Twelve guinea-pigs are inoculated under the skin of the abdomen with a pure culture of tubercle-bacilli grown on glycerin-serum. Four are kept as controls, and the rest are treated within two weeks of the virulent inoculation by injections of Koch's crude tuberculin, beginning with one milligram daily, and steadily increasing to one cubic centimeter, the intervals being lengthened as the doses become larger. Great care is found necessary in order not to kill the animal during treatment by an overdose of the remedy, two of them dying within six hours of taking the same dose that they had previously borne without accident; all the animals died tuberculous, the controls with an average life of eighty-eight days, the rest of the animals with an average of one hundred and twelve days.

So far as prolongation of life is concerned, these results would, indeed, seem meager, and differ but little from those obtained by other experimenters. Dujardin-Beaumetz,[1] Gibier,[2] Jaccoud,[3] Metschni-

[1] Read before the Association of American Physicians at Washington, May 24, 1892.

koff and Roux,[4] Bardach,[5] and Pfuhl[6] all failed to cure inoculated guinea-pigs, although Pfuhl obtained a marked prolongation of life in his test-animals.

The influence of the treatment is nevertheless strikingly illustrated by the autopsies. If a healthy guinea-pig be inoculated under the skin of the abdomen, the tissues and organs almost invariably become involved in the following order: the disease spreads with great regularity from the inoculation-point to the inguinal glands; thence to the retro-peritoneal glands, the spleen, the liver and the lungs. Thus, in the dead controls the pathologic processes are seen to be more advanced the nearer they occur to the inoculation-wound, while in the treated animals the reverse usually holds true.

The controls showed at autopsy cheesy inoculation-wounds, often still open, cheesy inguinal and retro-peritoneal glands, enormous spleen riddled with tubercles and cheesy areas, enlarged tuberculous liver, and a moderate number of young tubercles scattered through the lungs. In the test-animals, if treated for more than two months, on the other hand, the inoculation-spot is healed and covered with hair; the inguinal glands are firm, only slightly enlarged, and rarely cheesy; the spleen is either moderately tuberculous, or it may even be of normal size and appearance; the liver likewise; while the lungs are solid with cheesy tubercles.

It is probable, therefore, that the curative influence of tuberculin is exercised only when tubercle-tissue has once formed. The reparative processes that it incites seem to follow in the track of the disease, but are powerless to anticipate extension to neighboring structures. Habituation to the injection soon takes place. The dose grows rapidly, as the disease, overcome at one point, spreads to another; and by the time the lungs are attacked, anything short of a poisonous amount will no longer bring about the local reaction necessary to cure.

The pulmonary disease, therefore, progresses unchecked, and soon results in the animal's death. A fact observed in the experiments further on recorded strongly confirms this view. If tubercle-bacilli are injected into the anterior chamber of a rabbit's eye, and the treatment by injections of a product of the tubercle-bacillus be begun at once, the appearance of tubercles on the iris and cornea cannot be averted, and will be rather hastened than delayed, even though the efforts of the experimenter to effect a cure be ultimately crowned with success.

That tuberculin cannot confer immunity to subsequent infection has been shown by others and by myself in a research published at the time of Koch's announcement of the specific action of tuberculin. It would seem, therefore, that injections of tuberculin exercise a marked remedial influence on the tuberculous lesions of the guinea-pig, and can cure the primary ones; but contrary to Koch's belief, the injections cannot "protect the tissues from further invasion of the germs," for infection in these animals may spread from one point to another, even while a cure of the primary lesions is being effected by the treatment.

If this view be correct, the rapidity with which the disease becomes generalized in guinea-pigs would make their restoration a most trying test of the efficacy of the remedy. It is to be hoped that Koch will, before long, give the exact details of the methods of treatment that have in his hands led to the cure of these most susceptible animals.

Treatment with Hunter's Modifications.

Whether the injurious elements of tuberculin can be eliminated or not, without impairing its remedial virtues, is a question at present of vital interest, and upon which the highest authorities differ. Koch[7] measures the efficacy of his product by its power in certain doses to kill tuberculous guinea-pigs, and from the first he has insisted that the curative substances are inseparable from those that produce fever and local reaction.

In his latest research, in which he was assisted by Brieger, a significant silence on this point is maintained. Klebs,[8] on the other hand, asserts that he has obtained from tuberculin a material entirely free from fever-producing or dangerous effects, capable of destroying the tubercle-bacillus in the living bodies of men and animals, and of curing the disease. As yet, however, he has furnished no evidence that can be subjected by others to scientific tests.

In a recent communication on the chemical constituents of tuberculin, Hunter,[9] details the results at which he has arrived in producing a modified form of tuberculin, in terms so clear and concise as to invite other investigators to test his conclusions and attempt to throw some additional light on the points he has so admirably studied. Guided by the effects observed in lupus, he has sought, while retaining the curative substance, to eliminate from Koch's tuberculin those elements that produce violent reaction and fever, which he considers principally responsible for most of the accidents caused by this mode of treatment. As a result of his research, he proposes two modifications, which he designates merely as B and C B, both of which bring about in lupus certain reparative changes tending to cure, but unaccompanied by fever, and each varying greatly in the degree and intensity of the local reaction it produces.

Some light to guide us in the application of these important deductions to the treatment of human beings has been sought by a short study of the effect of Hunter's modifications on experimental tubercu-

losis. In these products has the curative element been retained? Have the substances that produce fever and uncontrollable inflammatory reactions, or hasten a rapid generalization of the disease been eliminated? Which of the two modifications is the more efficient and safe? To these questions a partial answer has been sought by the experimental method.

Experiments.

By following Hunter's clear and concise directions no difficulty was experienced in the manufacture of the two modifications he proposes, which were obtained at first from Koch's tuberculin, and later from tuberculin made in my own laboratory. Since dialysis is depended upon in these modifications to eliminate most of the fever-producing elements, special attention was given to that part of the process. The thinnest membranes possible were selected, and the full time recommended was allowed. Nevertheless, the substances obtained, especially "B," although producing much less fever than the equivalent of tuberculin, were found to invariably cause a very appreciable rise of temperature in tuberculous animals; but no deaths occurred as the direct result of the treatment.

The details of the experiments were the same as those already described, in which Koch's tuberculin was used. The results show an average life of ninety-two days for the controls, one animal still living seven months after inoculation; an average of eighty-nine days for the animals treated with C B; and of one hundred and twenty days for the animals treated with B, of which two are still living, seven months after the virulent inoculation. The living control, however, is tuberculous; the inoculation-wound is healed, but several large cheesy glands can be felt in the groin; he illustrates admirably the extreme limit to which the element of natural individual resistance may prolong life in inoculation-tuberculosis, and the fallacy of drawing hasty conclusions as to the influence of any treatment, if based on observations made upon the prolongation of life in single animals.

Two of the animals treated with C B died unusually early, namely, sixty-three and seventy-eight days respectively after inoculation. The autopsies showed a marked tendency to early generalization of the disease; emaciation was extreme; there were no very advanced or extensive caseous processes anywhere, but an enormous amount of young tubercle was equally distributed in all the organs.

The duration of life in the animals dying while under treatment with B was considerably above the average of the controls. The autopsies showed practically the same appearances, and the same attempt at repair in the inoculation-wound, glands, and spleen, as in animals dying while under tuberculin treatment.

The two guinea-pigs that are still alive (nearly seven months after the virulent inoculation) show healed inoculation-wounds, no enlarged glands, and their weight is a trifle more than at the beginning of the experiment. The dose of modification B has risen to seven cubic centimeters at an injection; the immediate result of which is to throw the animals instantly into tetanic spasms, from which, however, they recover within an hour. They no longer show any marked rise of temperature following the injections.

From the evidence obtained by this experiment, the following conclusions seem justified: 1. In Hunter's modifications the curative principle of tuberculin has been retained. This is especially true of modification B. 2. The fever-producing elements have been, to a certain extent, eliminated, but C B may favor rather than hinder the tendency to generalization. 3. Modification B is as efficient and is safer than either C B or crude tuberculin. Thus far my clinical experience with modification B has confirmed this conclusion.

Treatment by Filtered Culture-Medium and Bacterio protein.

Tuberculin is a most complex mixture of many hitherto-unknown organic compounds, and all attempts at solving the mystery of its chemical composition have been, as yet, only partially successful. Koch first speaks of his specific as being a 50 per cent. glycerin extract of the tubercle-bacillus; while, in a later communication, he describes it as being obtained by evaporation of liquid cultures. Whether, however, the virtues of this evaporated material are due to the extraction of the bacilli by heat, or reside in the soluble products with which they have impregnated the animal-broth during their growth, does not appear.

What is evident is that the whole is heated together, evaporated by heat, and the dead bacilli removed by filtration; the result being the complex mixture known as tuberculin.

To the bacteriologist liquid cultures resolve themselves at once into two very distinct and easily separable parts: namely, the tubercle-bacilli, which float on the surface, and the beef-broth in which they have grown. The tubercle-bacilli are principally composed of bacterio-protein, which is but very sparingly soluble in any reagent, while the liquid of ripe cultures holds in perfect solution the albuminous compounds and toxines that have been formed in it as the result of the growth and development of the microbes.

It has occurred to me that the eliminative method might here be applied with advantage, and that the future work of the chemist would be greatly simplified if it could be proved whether the remedial

principle is to be sought in the bacilli themselves or in the culture-medium in which they have grown. With this end in view the following experiments were carried out:

Liquid cultures of the tubercle-bacillus are filtered through hardened filter-paper. To this filtrate one per cent. of carbolic acid is added to preserve it, and it is now ready for use. This fluid contains all of the soluble albumoses and toxines, but no bacterio-protein, and nothing that may have been extracted from the bacilli by heat, as in the manipulation for producing Koch's tuberculin. It contains a hitherto-undescribed substance which is at once precipitated by a temperature of 100° C., and which is probably of the nature of a true toxalbumin, as it is thrown down by heat and causes fever in tuberculous animals. This substance is not a component part of tuberculin, as, in the manufacture of Koch's lymph, it must at once be precipitated by heat during the evaporation on the water-bath, and filtered off with the bacilli. Want of space forbids anything beyond a mere reference to this as-yet-unstudied element of filtered cultures.

An extraction of the bacterio-protein may be effected according to the first plan about to be described; a partial solution according to the second.

The mass of bacilli is first thoroughly washed, while still on the filter-paper, with tepid water. This is a tedious process, and should be carried on until the wash-water no longer shows any cloudiness when added to a solution of silver nitrate (the cloudiness being due to precipitation of silver chloride, caused by the presence of the sodium chloride contained in the culture-medium).

The bacilli may then be transferred to a flask containing a 50 per cent. glycerin-and-water mixture equal in volume to the original liquid culture made use of. The flask is put into the sterilizer for two hours, and after having been thus extracted the bacilli are removed by filtration through filter-paper. This filtrate is a true glycerin extract of the tubercle-bacillus, though, neither in its outward appearance nor in the effect produced by it in tuberculous animals has it apparently much in common with Koch's tuberculin.

A partial solution of the bacilli may be effected by transferring the well-washed culture-mass to an excess of boiling absolute alcohol for ten minutes, filtering while the alcohol is hot, adding an amount of pure glycerin equal to a quarter of the original volume of liquid culture used, and entirely evaporating the alcohol in the dry oven at a temperature of 55° C. This glycerin solution contains a large amount of bacterio-protein, but is so viscid that it cannot well be injected without first being heated, and even then a large needle is necessary.

With these two solutions several sets of tuberculous guinea-pigs were treated; the general observations made being that bacterio-protein solutions cause a slow form of suppuration at the site of injection; no marked fever even in very large doses (from two to three cubic centimeters); an over-dose never resulting in death, even when the animals are profoundly tuberculous. They produce no inflammatory reaction in and around tuberculous areas, and they have, apparently, no marked remedial value. They cause emaciation and general cachexia in the animals treated. From the autopsies, the 50 per cent. glycerin solution appears to hinder the natural chimiotactic reaction at the inoculation-spot or in the injected organ, and thus to favor a general spread of the disease.

Injections of the soluble products contained in the culture-medium in which bacilli have developed produce no local suppuration, but all of the characteristic reactions of tuberculin: distinct local and general reaction of a transitory nature, death invariably following an over-dose; marked improvement in the primary lesions, followed occasionally by general improvement and prolongation of life, and finally death by the spread of the disease to some distant organ, generally the lungs. By injections of this material chimiotaxis around diseased areas is greatly stimulated, a rush of leukocytes to the affected part invariably resulting from the treatment.

To obtain more conclusive evidence, recourse was had to another method of experimentation. Rabbits were inoculated in the anterior chamber of the eye according to the plan first proposed by Cohnheim and Salamonsen, and adopted by Baumgarten,[10] for the study of tuberculosis. In each experiment one group was kept as controls, while the remaining animals were divided into equal groups and treated with each of the solutions. Thus, the progress of the disease in the controls, as compared with its evolution in the eyes of the treated animals, could conveniently be watched and compared. This plan proved most satisfactory, and the evidence it brought forth is full of interest.

The Effect of Bacterio-protein Solution.

Injections of the second solution of bacterio-protein were begun from five to twenty days after virulent inoculation. They were followed by but slight, if any, fever, and caused no immediate and transitory irritation of the affected eye, which, nevertheless, steadily grew worse. They proved highly chimiotactic locally, producing suppuration at the site of puncture, and their prolonged use was followed by profound constitutional deterioration. The animals became anemic, emaciated steadily, and, if the treatment was pushed for a long time, often died of general cachexia.

On autopsy the kidneys occasionally presented the

appearance of chronic parenchymatous nephritis, and glandular abscesses and chronic pleurisy were noted. These observations confirm those of Straus and Gammaleia[11] and Muffici,[12] who found chronic poisoning to result from injections of dead bacilli. The beneficial effect on the eye-lesions was doubtful, and consisted in some cases of an apparent retardation during the second month of treatment of the destructive processes connected with caseation. The eyes were, however, never restored.

Effects of Soluble Products Contained in Filtered Culture-medium.

Injections of the filtered culture-medium in which tubercle-bacilli had been grown produced no local suppuration, only a transitory loss of weight occurring after each injection, and no serious deterioration in the animal's general health resulted. They were followed by distinct rise of temperature, varying according to the dose injected and the amount of disease present, occurring within four hours and lasting from twelve to eighteen hours afterwards, accompanied with marked but temporary irritation of the inoculated eye. Intense redness, iritis, purulent conjunctivitis developed at once, and later increased tension, cloudiness of the cornea, pannus, etc., slowly supervened, the vascular phenomena distinctly remitting during the intervals between the injections, which soon lost their irritating effect on the eye, unless the dose was steadily increased.

During the first six weeks, the treatment appears to have only sensibly hastened the progress of the disease, but about the seventh week, if the injections were begun within a few days after inoculation, an improvement in the eye-lesions first shows itself. The inoculation-wound in the cornea bulges less, and is less cheesy in appearance; the cornea is less cloudy, while no new tuberculous areas are seen to have formed on the iris. If the injections are commenced when the eye is already extensively involved, shrinking of the eye-ball and diminution of the diseased areas in the cornea are observed at this time, when destructive processes are rapidly progressing in the eyes of the untreated animal.

From this time, as the irritation caused by each injection disappears, marked improvement is apparent. The caseous areas slowly melt away, the dilated bloodvessels shrink and disappear, intra-ocular pressure diminishes, the cornea clears, and from twelve to eighteen weeks from the beginning of treatment the eye is to all appearances *cured*, in the sense that it has been restored as nearly to its normal condition as is consistent with the lesions existing when treatment was begun. The eye-ball may be but a shrunken fibrous mass, or the anterior chamber alone may be obliterated, the iris normal in appearance, adhering to the now transparent cornea, or the eye may be so little damaged that its function as a visual organ is almost completely restored. As to the permanency of this apparent cure time alone can decide. I have as yet no evidence to offer on this point, and it is not impossible that relapses may occur. The complete restoration (even if it should prove occasionally to be but temporary) of such delicate tissues, as the result of any general specific treatment, is a fact of the utmost significance and of the highest importance.

These results correspond in most particulars with those recently published by Professor Dönitz[13] and Sattler[14] in the treatment of eye-tuberculosis with Koch's tuberculin, theirs being the only observations as yet recorded in which any success has been attained in experimental tuberculosis by a specific method.

In the few autopsies made on animals whose eyes had been cured, no tuberculous disease was found in the other organs.

It should be borne in mind, however, that the anatomic conditions found in the eye are not at all favorable to a great spread of the local disease or to its rapid generalization. A study of the changes taking place during the restoration of the eye points distinctly to local reaction as an inseparable element of cure. If the dose be not increased, and, in consequence, the usual transient irritation be not produced, improvement ceases, and in time the tuberculous disease again progresses.

Attempts at eliminating from tuberculin those substances that produce local reaction would seem, therefore, to be of doubtful utility.

It is, thus, not to the bodies of the bacilli, but to the liquid that they have impregnated with the products of their life-history that we must look for the remedial element contained in ripe cultures. What is extracted from the bacilli themselves by heat in glycerinated media (as in the method hitherto adopted to produce tuberculin) cannot cure, and it is not impossible that it may hasten the spread of the disease by paralyzing the normal chimiotactic reaction of the system; besides, this substance is harmful to the health of living animals. For these reasons it should be eliminated. On the other hand, the soluble products contained in the animal broth in which bacilli have developed, but from which they have been removed by filtration without heat, can cure localized tuberculosis in the rabbit's eye, and it is to this element of liquid cultures that we must turn in future attempts to separate a substance free from the dangers of tuberculin, and yet capable of exercising, it may be, to a greater or less degree, a curative influence over visceral tuberculosis.

The conclusions to be drawn from this study may be briefly stated as follows:

1. Koch's tuberculin does not cure experimental tuberculosis in the guinea-pig, although its specific influence on the primary lesions is indisputable.

2. Hunter's modification, C B, contains less of the remedial principle than tuberculin, and is apparently quite as dangerous.

3. Hunter's modification, B, is as efficacious as tuberculin, and free from some of its dangers.

4. Solutions obtained as described from well-washed tubercle-bacilli have, when extracted with 50 per cent. glycerin and water, an injurious effect; when treated with hot alcohol, a doubtful and, at best, feeble remedial influence over experimental tuberculosis.

5. They produce suppuration and serious constitutional impairment, which may result in organic disease and death.

6. The liquid culture-medium in which tubercle-bacilli have developed, but from which they have been removed by filtration, contains the elements that bring about reaction and cure in tuberculous tissue.

7. Experimental tuberculosis in the rabbit's eye can be cured by injections of the filtered culture-medium.

8. The permanency of such a cure has not yet been established.[1]

REFERENCES.

[1] *Dujardin-Beaumetz.* Sem. Méd., February 11, 1891.
[2] *Gibier.* New York Med. Journ., March 14, 1891.
[3] *Jaccoud.* Sem. Méd., February 11, 1891.
[4] *Metschnikoff and Roux.* Annales Inst. Past. Nov. 25, 1891.
[5] *Bardach.* London Congress, August, 1891.
[6] *Pfuhl.* Zeitsch. für Hygiene und Infect.-Krankheiten, vii, No. 2, 1891.
[7] *Koch.* Deutsche med. Wochenschr., January 15, 1891.
[8] *Klebs.* Deutsche med. Wochenschr., November 5, 1891.
[9] *Hunter.* Brit. Med. Journ., March 14, 1891.
[10] *Baumgarten.* Zeitsch. für klin. Med., Berlin, 1885, vol. ix, pp. 141–151.
[11] *Straus and Gammaleia.* Arch de Méd. expér. et d'Anat. path., November, 1891.
[12] *Muffici.* Sem. Méd., November 11, 1891.
[13] *Dönitz.* Deutsche med. Wochenschr., November 19, 1891.
[14] *Sattler.* Deutsche med. Wochenschr., Nos. 1 and 2, 1892.

THE ECZEMAS OF INFANCY AND CHILDHOOD, WITH SPECIAL REFERENCE TO ETIOLOGIC AND DIETETIC CONSIDERATIONS.[2]

BY CHARLES P. RUSSELL, M.D.,
OF UTICA, N. Y.

THE types of eczema to which I invite your attention in this paper are the pustular, vesicular, erythemato-squamous, and seborrheal, the principal varieties ecountered in infancy and childhood.

That these varieties of eczema in the young are very frequently the local expression of hereditary taint, with consequent depraved cell-action and poor nutrition will, I think, be readily acknowleged by all who have much to do with skin-diseases, and a firm belief in the importance of considering these troublesome affections of the young from the standpoint of etiology, as bearing upon successful management, must be my excuse for bringing this subject before you.

Whatever affects the general nutrition of the body must necessarily influence the well-being of the skin, for that structure, as much as any other, depends upon normal blood and perfect cell-metabolism for its health and physiologic activity.

Broadly speaking, it may be said that there are two classes of influences at the bottom of imperfect skin-nutrition and predisposing to catarrhal inflammations: hereditary taint, as affecting normal cellular activity, and acquired poverty of the blood and tissues, the result largely of disorder of the digestive apparatus.

I will not consume valuable time by a consideration of the digestive processes in infancy and childhood, as you are all doubtless familiar with them. It is enough for our present purpose to show that the anemia and tissue-debility resulting from improper feeding in the young is a powerful factor in the causation and persistence of their eczemas.

If we glance at the differences in structure between the cutaneous envelop of the infant and that of the adult we will see reason why that of the young and growing child is more disposed to take on inflammatory action. In infancy the circulatory and nervous systems of the skin are developing and expanding with great activity, the tissues are young and succulent, the capillary circulation is very active, the lymph-channels and lymph-glands are relatively large, and the sensory nerves are extremely impressionable and easily irritated.

A distinguished British writer, Stephenson, aptly says: "It is dependence upon development which distinguishes the eczema of the child from that of the adult. Under its influence we see its character modified according to the age of the child; we find it obstinate under treatment at the earlier stage and amenable to it or undergoing a spontaneous cure as the period peculiar to it draws to a close." This author places the limit of the period of extreme liability to catarrhs of the skin at six years. From my own experience I can indorse Stephenson's dictum, and say that eczema of any variety, but more particularly the pustular and vesico-pustular, is more severe, more rebellious to treatment, the more nearly its time of development approaches to birth. This

[1] The paper was followed by a demonstration of the curative influence of the treatment by means of photographs and living animals.

[2] Read before the Section of Dermatology and Syphilology of the American Medical Association, at Detroit, June, 1892.

is especially true, I think, of eczema impetiginodes, whether depending upon a scrofulous taint or upon simple debility.

Eczema pustulosum is preëminently the type of scrofulous eczema, although at times it is encountered in children who are simply anemic or poorly nourished. When the scrofulous taint is the marked predisposing factor the disease seems to develop at an earlier age than when it is the expression of anemia and malnutrition alone, and the more pronounced the element of struma in any case the more subacute the catarrh, the more sluggish the reparative processes, and consequently the more rebellious to treatment.

When we ask just how the strumous taint acts upon the nutrition of the skin we ask a question that pathologic histology has not yet enabled us to answer definitely.

From the pathologic studies of Neumann and others we know that in scrofula the lymph-channels are enlarged, dilated, and in places more or less obstructed by the excessive formation of the small, round lymph-cells or lymphoid corpuscles.

This process, being a general one, must take place, to a greater or less extent, in the lymph-spaces of the derma, which we know also from the investigations of Neumann, are relatively larger in the scrofulous than in the healthy skin.

If this be so, it seems reasonable to suppose that the resulting pressure upon the vascular structures and cells of the corium must interfere with and prevent normal nutrition. Be this as it may, clinical experience shows that there is a peculiar, depraved nutrition of the skin of the strumous child, which extends at all times an invitation to eczema. In many cases of pustular eczema we cannot find any external cause, or the external irritation is only very slight and transitory in action.

When external irritants coöperate with hereditary taint in producing an eczema, the part played by the irritant is oftentimes very slight and of secondary importance. A prominent external factor in some of these cases is the decomposition of the fatty acids of the sebaceous secretion, which is often abnormally abundant in debilitated infants. This excess of production is at times especially marked upon the scalp, neck, forehead and buttocks. Among other sources of external irritation, besides accumulation and decomposition of the natural secretions, from lack of cleanliness, may be mentioned too frequent bathing, immoderate friction, the use of coarse super-alkaline soaps, acid excretions left in contact with the skin, prolonged contact of catarrhal discharges from mucous surfaces, over-sweating and maceration of the epidermis from too much or too warm coverings, piercing the ears, and scratching to relieve punctures from various causes.

Treatment. The pustular or impetiginous eczema of the young depends so largely upon the influence of diathesis that to be efficient its treatment must consist primarily of measures calculated to increase nutrition. Purely local treatment is in many cases insufficient, and must necessarily be so when we consider the vicious constitution, the anemia and debility so often at the root of the disease.

Many obstinate cases of eczema pustulosum in nursing children are rendered more so by the child being half starved on account of the poor quality of the mother's milk. These cases begin to improve very rapidly after the substitution of a healthy wet-nurse, if that is practicable, or, if that cannot be afforded, good cow's milk, properly diluted according to the age of the infant. I think it best in most cases to give the milk in its natural undigested state if there be no catarrh or marked weakness of digestion. In warm weather, milk can be kept from decomposing by the usual process of sterilizing by heat and then preserving in tightly covered, absolutely clean jars in a refrigerator or other cool place. In the ordinary run of cases this seems to me much better than peptonizing it. The bitter taste of peptonized milk, when overheated, makes it very unpalatable, and we have all seen it a difficult matter to overcome the repugnance of some infants to it. If for any reason the infant cannot digest the milk after a fair trial, a resort may be had to the peptonized article, until the child's digestive processes have become stronger. Some illy nourished, puny little ones I have found will digest an artificial food like Nestlé's or Carnrick's better than milk in any form. Condensed milk I mention only to condemn as a food for an eczematous infant. It contains too large a proportion of saccharine matter, and too little of the true strength-giving elements. Whatever line of dietetics the little patient is put upon, the important thing is to select the most nourishing food that is at the same time the most digestible—the aliment that is most easily digested by the patient under treatment, for it is the patient you have to treat as well as the disease.

I have found emulsion of cod-oil particularly useful in eczemas associated with struma, especially one known as peptonized cod-liver oil and milk. In my hands the administration of this has been productive of much benefit, not only in the scrofulous child, but when malnutrition, pure and simple, seemed to play a part in maintaining the eczema. In the case of bottle-fed infants, the peptonized oil and milk may be added directly to the cow's milk, or be fed from the spoon in doses of a teaspoonful from four to six times a day. In nursing infants, when the natural food seems to be thin and lacking in fatty matter, the oil may be given through the medium of the mother. For this purpose I

think very well of the combination of cod-liver oil and malt, as uniting a nutrient with an agent promoting assimilation and lactation.

Infantile eczema, whether vesicular or pustular, when some degree of anemia exists, is often much benefited by the administration of some form of iron. The syrup of iron iodide is indicated and is a most useful hematinic in the anemia of scrofulous eczema. In the simpler forms of anemia resulting from poor food, bad air and want of sunshine, I have found ammonium and iron citrate and the lactate very assimilable and unirritating forms of iron. Lately I have used a syrup of ferric chloride in some cases of eczema with impoverished blood, and have found it exceedingly well tolerated by very young children and very prompt in its effects.

In all varieties of infantile eczema, constipation, if present, must be corrected. This should always be attended to at the outset, before the regular line of treatment is instituted. We often meet with obstinate constipation in eczematous infants at the breast, there seeming to be some constipating quality of the milk. In other cases the constipation is evidently due to a deficient secretion of bile, as shown by the sallow skin, furred tongue, and clay-colored stools. I have found granules of podophyllin, gr. $\frac{1}{40}$, useful in relieving constipation of this sort. In some few cases the podophyllin may irritate a little. If it does, it may be advantageously replaced by calomel in doses of from gr. ½ to gr. 1 three times a day, for a few days, until the liver has been well acted upon, and the tongue becomes clean; or the combination of rhubarb, mercury with chalk, and soda may be given. When constipation seems to be due to some alteration in the quality of the mother's milk the infant may be given from ten to twenty grains of sodium phosphate in a little warm, diluted milk, night and morning; or the extract of malt may be administered in doses of a teaspoonful, added to the milk. The non-bitter fluid extract of cascara, in combination with malt, I have found serviceable in treating the constipation of children with eczema. It is particularly useful as a tonic to the glandular structures after hepatic torpor and derangement has been corrected. It has also the advantage of containing a diastasic nutrient. Many children with eczema suffer more or less from a mild gastric catarrh. This favors the spread and increases the tenacity of eczema. We may combat this with small doses of calomel, say gr. ½, or of mercury with chalk, say gr. 1, three or four times daily for a few days, followed by bismuth or ammonium citrate.

Vesicular eczema. It is a peculiarity of vesicular eczema, as distinguished from the more pustular form in young children, that it tends to invade a much larger surface. We see it is not so much restricted to the face and scalp and contiguous regions. It is a common thing to see not only the head, but considerable portions of the trunk and upper and lower extremities invaded by it. It is commonly presented to us in the beginning of its second stage. We then have the common picture of an intensely reddened, swollen, itchy, exuding surface; the discharge drying into yellowish scales and crusts; or where exudation is not so abundant, the exposed red, raw, bleeding mucous layer. Typical vesicular eczema occurs in a class of children of better general health than obtains in the lymphatic or strumous form. It is not so essentially dyscrasic in nature, but it is oftener the expression of constitutional states and acquired blood-conditions. In most cases these acquired states coöperate with external irritation in evoking the eczemas of the vesicular and erythematous types. As the result of my own observations, I should say that external irritants play a much more important part as factors in the causation of vesicular eczema than they do in the pustular or impetiginous varieties.

Scrofulous eczema is more often the result of a congenital morbid impression on the skin, alone or in association with a mild irritation. The non-diathetic eczema is more often the result of acquired conditions coöperating with external irritation of a more pronounced character. We must also take into account the fact that the non-strumous integument is thinner, has a more active capillary circulation, and is thereby rendered more responsive to both external and internal forms of irritation. All conditions producing reflex irritation of the skin, such as delayed and difficult dentition, repeated attacks of acute indigestion, gastro-enteric catarrhs, intestinal parasites, are prominent among the internal causes of vesicular eczema in infancy and childhood.

The bronchial asthmas of rickety children. There is a peculiar alternation sometimes seen between bronchial asthma and eczema in rachitic children, the one acting substitutively for the other.

In children, from two to six years of age, we occasionally meet with eczemas tending toward an erythemato-squamous type, attacking the back, the gluteal region, and lower limbs. In many of these cases I have found the urine habitually hyperacid from excess of urates, depending upon a suboxidation of imperfectly digested food, usually containing an excess of the nitrogenous elements. The little subjects are often plump, and apparently well-nourished, but all are pale, with dry and harsh skin, furred tongue, and irregular action of the bowels. This erythematous eczema, which early passes into the squamous stage, is likely to be associated with an overacid condition of the system. Very often we find that these little subjects have been allowed tea and coffee, and that fried dishes, meats, pastry, and other unsuitable articles have

entered largely into the dietary. The first and most important thing to do in assuming charge of such a case is to eliminate at once from the diet-list all nerve-stimulating beverages and rich, indigestible food. The food taken should be mild and unstimulating. There should be a judicious admixture of nitrogenous and carbohydrate aliments, not reaching excess in either direction. Powdered beef-peptonoids is a good dietetic preparation; I have found it of much service when digestion was weak, it being nourishing and at the same time not overstimulating. Some chronic weeping and scaling eczemas in children, associated with a scanty, heavy urine, are much benefited by the administration of alkalies. I prefer the vegetable acid salts of potassium for children, as they are better borne by the stomach and diffuse more quickly into the blood. Potassium acetate is most useful in this connection, given in from five- to ten-grain doses, well diluted, after meals. It can be given with a tonic, such as nux vomica or cinchona, if there is much general debility. The liquor potassii citratis may also be given with good effect in these cases.

Whatever diversity of opinion there may have been with regard to the efficacy of arsenic in the scaling eczemas of adult life, there is, I think, practical unanimity in favor of its use in the squamous stage of the disease in the child. Personally, I may say that I have seen prompt improvement follow the exhibition of arsenic in infantile scaly eczema. It seems to be more especially useful in thin, nervous subjects. Young subjects will bear relatively larger doses of arsenic than adults, there seeming to be a parallelism between their tolerance of this drug and that so often manifested for mercurials. In the papular eczemas arsenic is generally useful. Typical papular eczema is not very frequently encountered in children under six. It is sometimes advantageous to combine small doses of arsenic with potassium acetate or citrate. The indications for this union of two valuable therapeutic agents are the usual urinary indications for an alkali and a sluggish subacute state of the eruption, a prolonged halting in the stage of repair.

The several forms of eczema in the first years of life may be found in children who seem to be perfectly healthy, presenting no evidences of inherited or acquired disease, and no marked symptoms of functional derangement. In this class the determination of catarrhal disturbances of the skin may be wholly due to external irritation. In others the train is fired by some temporary nerve-irritation acting reflexly upon the skin, such as teething, the sudden change from a milk-diet to a diet of farinaceous and animal food. Furthermore, in searching for the cause we can in a considerable number of cases only content ourselves by saying that the child has an inherited predisposition to eczema, making it easy for any external irritation to evoke the disease.

Eczema seborrhoicum is occasionally met with during infancy and early childhood. If we are willing to extend the use of the term to simple collections of fatty scales upon the scalp, making that the first stage, as Unna does, then it is a relatively common disease in children. In its more pronounced form I do not believe that it is very frequently met with in the very young subjects whose eczemas are the subject of this paper. In my experience it does not seem to be generally associated with a depraved constitution or impaired general health. Certainly, most of the cases that I have seen have been in healthy children, although I have seen a few associated with a scrofulous taint. Whether that had any predisposing influence or not, I am not prepared to say.

Eczema seborrhoicum in its second stage, presenting oval and round dull-red, slightly elevated macules, covered with crumbly, greasy scales and crusts, the individual spots enlarging and coalescing, is sometimes seen upon the faces of very young children. In them it does not, however, show the same disposition to extend rapidly downward that it does in adolescents and adults. The more nearly we approach infancy the more often do we meet with it in the first stage, or as a so-called seborrhea sicca capitis. With each added year of life the disposition to assume the crusted and moist form is intensified. Most of the cases do not seem to require any internal treatment, the subjects being usually in good or at least fair health. If in any case we discover functional derangements of the stomach, bowels, kidneys, or liver, these deviations should, as far as possible, be corrected at once, just as in the treatment of any other variety of eczema. If we find the disease associated with inherited struma, syphilis, or any other constitutional taint, the alterative and tonic treatment applicable to these dyscrasiæ is certainly indicated, in addition to efficient local applications. In the internal treatment of seborrhoic eczema there is one remedy that I have used in a few cases and, I think, with some benefit, and that is ichthyol. In those few cases it has been well borne, and has seemed to shorten the duration of the disease. I have given it in doses of from one-half to three grains, in pill, according to age.

From what has been said in this paper concerning the nature and etiology of eczema in infancy and childhood, the following conclusions may be drawn:

1. A large proportion of infantile eczemas have for their basis an inherited constitutional taint or dyscrasia.

2. In a certain proportion, and a fairly large one, anemia and malnutrition act as predisposing causes,

impressing upon the disease a tendency to chronicity and rendering it less responsive to local treatment.

3. Eczemas originating during the first year of life are usually more obstinate than those arising later, and in them constitutional treatment is very important.

4. The eczemas occurring during the early years of childhood, between two and six years of age, generally takes on the more typical vesicular type. They are rather vesicular or erythematous than pustular, and external irritation plays a relatively more important rôle in their production.

5. The internal predisposing cause in these eczemas is oftener some acquired condition than an hereditary one.

6. Dietetic, in addition to alterative, treatment is most important in the strumous eczemas of infancy. Cod-liver oil, malt, and iron iodide are the best constitutional remedies, either alone or in combination to suit individual conditions.

7. In the internal treatment of the vesicular and erythematous eczemas of early childhood, remedies addressed to the correction of acquired states and functional derangements of the chylopoietic system are more often indicated. Malnutrition and anemia must first be removed by simple, easily-digested food. Dyspepsia, gastric irritation, intestinal catarrh, hepatic torpor, and deficient kidney-action must all be treated and removed by appropriate remedies, before any striking effects can be obtained from local applications.

THE EFFECTS OF HEAT AS MANIFESTED IN WORKMEN IN SUGAR-REFINERIES.

BY W. M. L. COPLIN, M.D.,

ADJUNCT PROFESSOR OF HYGIENE, DEMONSTRATOR OF PATHOLOGY, CURATOR OF THE MUSEUM, JEFFERSON MEDICAL COLLEGE; ADJUNCT PROFESSOR OF PATHOLOGY, PHILADELPHIA POLYCLINIC; A. A. SURGEON, M.-H. S.; PATHOLOGIST TO ST. AGNES' HOSPITAL;

D. BEVAN, M.D.,

INSTRUCTOR IN HYGIENE AND INSTRUCTOR IN CLINICAL MICROSCOPY, JEFFERSON MEDICAL COLLEGE; BACTERIOLOGIST TO ST. AGNES' HOSPITAL;

AND

H. SOMMER, JR.

ON Monday, July 25, 1892, the temperature of the city of Philadelphia had been gradually creeping up until it reached blood-heat. Mr. W. W. Harrison, representing the Franklin Sugar Refining Company, sent a note to Dr. Coplin stating that, by reason of the extreme heat outside and of the still higher temperature in many parts of the refinery, the men were beginning to show evidences of suffering, and requesting that arrangements be made for giving all who might present themselves professional attendance in the refinery.

An accident-room had been fitted up upon the ground floor of one of the coolest buildings. The room is fifteen feet square, has two windows opening into the street and a door opening into the refinery. The floor is of concrete, and the walls and ceiling are plastered and painted. There is no ingress of air from the refinery proper except through the door when open. In anticipation of being utilized for the treatment of accident-cases, this room had been fitted up with a medicine case, a desk, a table, an ice chest, a large, flat bath-tub, hot and cold water, a bed, and two large stretchers. Illumination is furnished by four incandescent burners, one of which is portable and can be carried conveniently to any part of the room. There is a full complement of medicines that may be needed for emergencies, thermometers, bandages, antiseptic dressings, splints, record-sheets, and books for making the necessary notes of an emergency hospital. The temperature of this room on the hottest days ranges from 95° F. to 100° F. By reason of the extreme heat, a blast, six inches in diameter, was arranged along the ceiling of the room, with angular tubes, projecting downward and so placed that they can be turned in any direction; by means of slides placed in the opening the blast can be fully regulated or shut off from any one or more of the tubes. This blast is connected with a ventilating fan driven by an electric motor, securing between 1500 and 2000 revolutions per minute and delivering air, brought from the street, through a large funnel containing filtering sieves, into the room with a current sufficiently strong to lift the hat from one's head if standing at a suitable angle. A thermometer in an air-tight box would register 95° F.; if kept in the current of air the registration would be from two to five degrees lower, and the constant change of air rendered the room pleasantly cool.

The temperature of the water from the ordinary supply was about 80° F., so that water from an artesian well, with a temperature of 45° F., was piped in at such pressure as to furnish a fine spray of enormous force.

The temperature throughout the different parts of the refinery varied from 95° F. to 165° F. Some of the men worked constantly in temperatures of from 115° F. to 118° F., and although the building is abundantly supplied with ventilating fans, run by both steam and electric motors, there prevailed a stillness that was absolutely oppressive. The men are for the most part foreigners and accustomed to the work, which, although in a sense laborious, is so arranged as to require no continuous labor in very hot places for any one individual. The foremen of the different departments are intelligent and well trained, and to these were issued instructions that should anyone complain of any symptoms whatever, or show any evidence of illness, he should be brought to the accident-office for examination.

Arrangements were perfected by which Mr. Henry Sommer, Jr., should be constantly on duty and Dr. Coplin and Dr. Bevan on duty during certain hours.

The number of men on duty in the various departments numbered 800 in the day and 500 in the night. The shifts of men changed at 6 o'clock in the evening and at 6 o'clock in the morning. The number of cases treated, with the temperature out of doors, and the results of treatment were as follows:

	Highest Temp. out of doors.	Number treated.		Returned to work.	Sent home.	Sent to hospital.	Fatal.	Total.
		A. M.	P. M.					
Monday, July 25	93°	...	13	9	3	1	1	13
Tuesday, " 26	101	32	37	58	11	...	...	69
Wednesday," 27	96	23	14	33	4	...	...	37
Thursday, " 28	96	15	24	32	7	...	...	39
Friday, " 29	98	21	17	35	2	1	...	38
Saturday, " 30	87	5	9	13	1	...	...	14
Sunday, " 31	80	1	1	2	...	...	...	2
Monday, Aug. 1	...	1	...	1	...	...	...	1
		98	115	183	28	2	1	213

Of this number, it will be observed, 183 returned to work; 28 were sent home; 2 were sent to the hospital, and 1 of these died. The temperature of the men ranged as follows: In 2 the temperature was over 108° F.; 1 of these died (temperature 110° F.), 1 recovered (temperature 108.8° F., rectal). In 28 the temperature ranged between 105° F. and 108° F.; in 7 of these it was above 107° F.; in 11 above 106° F.; in 10 between 105° F. and 106° F. In 50 the temperature ranged between 102° F. and 105° F.; in 17 of these it was above 104° F.; in 13 above 103° F. and below 104° F.; and in 20 between 102° F. and 103° F. Of the remaining 133 the temperature in 62 was above 101° F.; in 49 it was between 100° F. and 101° F.; in 8 between 99° F. and 100° F.; in 6 between 98° F. and 99° F.; in 5 between 97° F. and 98° F.; in 1, 96° F.; in 2 between 95° F. and 96° F.

As to the hours at which the men became sick: 102 cases occurred in the twelve hours following midnight, 111 in the twelve hours following midday. Of the four quarters of the day, 57 cases developed between midnight and 6 A.M., 45 between 6 A.M. and noon, 66 between noon and 6 P.M., and 45 between 6 P.M. and midnight. The larger number of attacks occurred at or about the changes of shifts, namely, between 3 o'clock and 5 o'clock, A.M. and P.M. This would be expected, as at those times the men had been exposed to the heat for several hours and the lunch at 12 o'clock had had time to lose its invigorating effect.

The humidity seemed to be a most important factor in the development of the attacks. Thus the great majority of the cases occurred in the boiler-room, the air of which contains escaped steam and is of relatively high humidity, and in the "mixer," where the raw sugar is emptied into the melting-reservoir, over which the men work and where there is constantly present a large quantity of aqueous vapor. There is also a relatively high degree of humidity where the centrifugal machines are running, which is partly overcome by the forcing in of large quantities of cool air, keeping the temperature down, but not proportionately reducing the danger.

From the temperature-records it would also appear that temperatures several degrees higher can be borne if the atmosphere is dry than if it is moist. In the boiler-house the temperature varied from 120° F. to 132° F., averaging between 122° F. and 124° F., with no great percentage of cases, while on the machine-floor, with a temperature between 112° F. and 120° F., averaging from 115° F. to 117° F., with a high degree of humidity, 60 cases developed. New men, unaccustomed to the work, suffered more than the old hands. Men who had been able to eat and sleep while off duty rarely became prostrated, while of those unable to eat and sleep during the hours of rest few escaped. All of the men, at least the larger percentage, drank beer freely, and many claimed that it enabled them to better withstand the effects of the heat. There was certainly no evidence of their suffering as much as those who drank but little or none at all. Those who drank largely of the water were extremely prone to suffer.

SYMPTOMS.—The most constant symptom, and the one of which the patient complains the most, is "cramp," usually referred to the region immediately below the ensiform appendix, not infrequently associated with similar pain in the calves of the legs, occasionally in the back, sometimes also in the hypogastrium, less commonly in the thighs and in the upper extremities. The patient also complains of difficulty of respiration, as though a weight were on his chest. Occasionally there is pain in the splenic or hepatic region. In nearly all of the cases headache is present, the character of which, according to the patient's statement, is sharp and throbbing; it is usually temporal or supra-orbital, rarely occipital. In some of the cases nausea was present; vomiting rarely occurred. The patient is agitated; muscular movements are executed in a jerky manner; the skin is pale, usually cold and clammy if the temperature is below 102° F. or 103° F.; rarely will the surface-temperature

be high. The axillary temperature is not always to be depended upon; in the fatal case, to be narrated later, the axillary temperature was only 105° F., while the rectal temperature was 108° F. In a few of the cases diarrhea was present; in the majority constipation preceded the attack.

Consciousness rarely wavers until the temperature passes 106° F. Its gradual loss may be briefly outlined as follows: The patient feels sick at stomach, and may even attempt to vomit; there is vertigo; the pupils sluggishly respond to light but not in accommodation. The eyes are vacantly fixed, the lids move slowly and infrequently; the voice wavers, often becoming sepulchral.

This condition slowly passes into delirium, which occasionally becomes active and at times fierce and uncontrollable, and during which convulsive movements may occur; these usually begin in the extremities, but may, later, involve the muscles of the trunk, more particularly those of the back, and occasionally those of respiration, giving rise to interference with breathing and cyanosis. During the convulsive seizure the arms are drawn closely to the sides and the elbows backward, so that the patient may rest upon the elbows and heels or elbows and buttocks; the head is rotated from side to side; respiration is sighing, occasionally moaning; the pupils do not respond to light, and not infrequently the lids are spasmodically closed; the pupils may be unequal. The patient swallows with difficulty, if at all. As the temperature cannot be taken in the axilla or in the mouth, the rectum must be depended upon. The mercury in the thermometer rapidly rises to 106° F., 108° F., and 110° F., or even higher, and unless the temperature be speedily reduced death must ensue. In the milder cases the temperature is below 105° F.

Speech may be jerky. There is intense headache. The skin may be moist, or it may be dry; if moist, it is cold and clammy. In either case the skin and lips are pale. The conjunctiva is brilliant. The ears are cold. The finger-nails are blue or of an ashen whiteness. Not infrequently there is tenderness in the hepatic and splenic regions. Untreated, these cases, as a rule, become transformed into a graver type. Removal from the heated surroundings to a cooler place does not entirely prevent their progress, and the large majority of cases become progressively worse. If the case progresses unfavorably, coma sets in. In fulminating cases coma may develop without any precursory symptoms.

The cardiac impulse is diffused, as though the ventricles were distended and the organ laboring. The pulse is "floody," a term coined to express the condition. To the finger it is like a sudden flood of blood coursing in the channel of the vessel, and disappearing upon the slightest pressure. Irregularity in the pulse and in the cardiac rhythm is a constant feature. There is ordinarily no increase in the intensity of the heart's sounds, certainly no accentuation.

The urine is scanty and high-colored, and when the pyrexia becomes excessive albumin may be temporarily present in small quantities. There is a constant desire to urinate, though often no urine is voided. There is pain in the cervical region, more particularly posteriorly, on either side of the median line. There is almost invariably pain in the back, and in a few cases girdle-pains were present.

The patient may be conscious of the high temperature; but, as a rule, he feels cool, not infrequently chilly when brought out of the intense heat. In a number of cases in which the temperature ranged about 105° F. a blanket felt comfortable. The pyrexia is, as a rule, not appreciable on the skin or surface during consciousness.

In one case cyanosis manifested itself. In the milder cases the temperature ranges from the normal to 102° F. The patient complains of flushes of heat alternating with chilliness. There is great thirst. Removal from the extreme heat will often be followed by a gradual return of the temperature to the normal, and only weakness, entirely disproportionate to the other symptoms, remains.

DIAGNOSIS.—There is, of course, no difficulty in making the diagnosis of a well-developed case of thermic fever in which the temperature is characteristically high. Cases of this kind, unfortunately, are not those in which mistakes are made, and there is but one condition with which they may be confounded, namely, uremia. It is scarcely possible to mistake thermic fever for apoplexy. The temperature would in almost all cases be the guiding point, and the marked disparity between the internal and surface temperature will always lead in the right direction. One of the cases that did badly in treatment, and which afterward died, presented many of the features of uremia. We must confess that the breath had a distinct urinary odor. There were convulsive seizures, and the moaning and gritting of the teeth not uncommonly observed in uremia. There was no urine in the bladder. Of course, the temperature is the diagnostic point of dependence. We are convinced that many of the milder cases are mistaken for cases of ordinary cramps, enteralgia, or intestinal indigestion, by reason of the abdominal pain that is almost invariably present. The patient, however, who has had cramps or intestinal indigestion will immediately recognize that there is a difference in the character of the pain; there is besides some elevation of temperature—not sufficiently great, however, to make the diagnosis positive. In the earlier hours of the attack the temperature will usually range from 102° to 104° F.

The skin will be cold and clammy; nausea will be present, occasionally vomiting. The character of the cramps is an important factor in making the differential diagnosis. They are more frequent than in ordinary enteralgia, and are not relieved by counter-irritants, pressure, or hypodermatic injections of morphine. In one case, a grain and a half of morphine were administered hypodermatically without effect upon the pain. Such a condition will often aid in making a diagnosis.

PATHOLOGY.—The consideration of the pathology has been deferred until after the consideration of the symptoms and diagnosis, on account of its hypothetical character.

The pathology of thermic fever is obscure. The most lucid observations upon the subject are those of Professor H. C. Wood. The fever itself is held to be "due to paralysis, under the influence of the extreme external heat, of the center in the medulla which regulates the disposition of the bodily heat. Owing to this disturbance more heat is produced while less is given off than normally" (Osler). This statement is but a juggling of words, and expresses neither the morbid anatomy nor the pathology of the condition. That there is venous engorgement is, in a sense, true, but it is not entirely so. Probably the apparatus more particularly affected is that portion of the circulation included in the portal system. Here, no doubt, the blood accumulates in the largest quantity, as may be inferred from the facts that follow.

The area of hepatic percussion-dulness is enormously increased, and, as a rule, in proportion to the intensity of the attack; when the overlying abdominal wall or the distended intestine permits of careful splenic percussion it will likewise be found that the area of splenic dulness is increased. The location of the pain corresponds with that observed in some of the forms of malaria in which hepatic and splenic congestion is a prominent feature. Again, the surface temperature of the abdomen is higher than that of any other part of the body; the rectal temperature is from two to three degrees in ordinary cases, and from three to five degrees in more severe cases, higher than the temperature of the mouth, which in turn is one or two degrees higher than the temperature of the axilla. Other features suggestive of an accumulation of blood in the viscera are the extreme pallor of the skin, the inability to produce redness by ordinary methods and the difficulty that attends attempts at blood-letting. In the one case in which blood-letting was resorted to, the blood was extremely dark. It clotted with usual promptness, but showed no other evidence of alteration than the intense darkness.

The cause or causes that determine an accumulation of blood in the viscera probably act in one of two ways, or possibly both: (1) Contraction of the cutaneous capillaries under the stimulus of the extreme heat, thus diverting the blood to the viscera; (2) Paralysis of the vascular apparatus of the portal and possibly of the pulmonary system, favoring stagnation. Which is the correct hypothesis cannot at present be stated. Good reasons may, however, be presented in support of each.

The cause of the headache is probably the intense cerebral congestion. The absence of muscular fibers in the cerebral arterioles is in favor of the view of stasis. The cramps are probably abortive convulsive seizures due to the interference with excretion and the retention of metabolic products, closely resembling the condition in eclampsia. It is not necessary to refer to the degenerative changes that have been found in the viscera post-mortem, as it is not probable that they occur in cases in which recovery takes place.

PROGNOSIS.—The prognosis is largely dependent upon the time at which the patient comes under observation. Before consciousness is lost the prognosis is extremely favorable. In the case of a man who staggered into the accident-room, unable to give his name, check-number, or address, and in whom the temperature was 106.5° F., recovery was rapid under treatment, and the man returned to work, contrary to our advice, and so far as we are aware suffered no inconvenience afterward.

Apart from early treatment, the prognosis will depend almost entirely upon the temperature. If this does not exceed 105° or 106° F., recovery is the rule; if the temperature be higher the prognosis is less favorable, although very high temperatures are not necessarily fatal. In cases in which the temperature reaches 107° or 109° F., the patients almost always recover, provided the pyrexia is not long continued.

Age is a determining factor in prognosis. The old are less favorable subjects than the young. The habitual use of alcoholic stimulants has been supposed to render the prognosis in individual cases more grave, and as the laborers in the refinery, mostly Germans, habitually drink large quantities of beer, perhaps whiskey and other intoxicants, one would suppose that the mortality must necessarily be large. This has, however, not been our experience. A man with the alterations of tissue and function that accompany the habitual use of alcohol would be more likely to succumb than one in health; thus chronic catarrhal conditions of the stomach and cirrhosis of the liver must add materially to the gravity of the case; that alcohol *per se* does so is doubtful.

TREATMENT.—The treatment of cases in which there is elevation of temperature may be summed up in the injunction, "*increase the peripheral cir-*

culation;" anything that will accomplish this end will help the patient. If the skin can be made intensely red, and the pulse, which may not be perceptible at the wrists, can be brought up, the patient will immediately feel better, and in the large majority of cases consciousness will at once return. While under ordinary circumstances the restoration of the activity of the cutaneous circulation is easy, in thermic fever it is not so. In the treatment of our cases, large undressed sponges, gritty and hard, were freely used by two muscular assistants. In all of the cases except the fatal one and another to which we shall refer later, cutaneous redness was secured in from three to fifteen minutes. With the restoration of an active peripheral circulation the symptoms rapidly subsided. Remedies that attain this end may here be used to advantage. Atropine seems certainly indicated, and in our hands has given excellent results. If less than $\frac{1}{60}$ of a grain be given hypodermatically at a dose the medicament is wasted; in severe cases $\frac{1}{40}$ or even $\frac{1}{30}$ of a grain may be used, preferably in two doses, with a brief interval —say, of five minutes.

Aromatic spirit of ammonia acts happily and is the only medicament which acts with equal promptness when administered by the stomach or subcutaneously. It should be given in doses of from half a dram to a dram in milk. Morphine in doses of not more than a quarter of a grain may be advantageously combined with either aromatic spirit of ammonia or atropine. Strychnine does good in cases in which there is great prostration or inordinate muscular weakness. The nausea is best combatted with cracked ice.

Toward the close of the epidemic the advisability of employing amyl nitrite was discussed, on account of the promptness with which it induces a peripheral determination of the blood. The drug was used in but one case, but with the most gratifying results. A "pearl" containing three minims was crushed in a handkerchief and the patient allowed to inhale the vapor freely. The headache and cramps immediately disappeared like magic, and the temperature, which had been 102.6° F., fell in a few minutes to 99° F. No other medicament was used. Half an hour after the treatment the patient felt entirely comfortable, with the temperature normal, and after the administration of morphine sulphate, grain $\frac{1}{4}$, and atropine sulphate, grain $\frac{1}{40}$, hypodermatically, he proceeded home and reported for work on the following day. Although we have not employed nitro-glycerin, it seems probable that it might be advantageously substituted for amyl nitrite. Ice applied to the head will alleviate the headache.

The reader has, no doubt, ere this, expected that each successive sentence must bring some reference to the cold bath. While we believe the cold bath to be a most efficient adjunct in the treatment of the hyperpyrexia, we would at the same time urge that careful judgment be exercised in its employment. Given a patient with embarrassed peripheral circulation, with empty capillaries on the exposed surface, and the blood stagnant in the glandular viscera, one should hesitate in the use of an agent that admittedly favors the very condition to be combatted. The efficiency of the bath depends largely on the accompanying friction. In 75 per cent. of the cases here reported the cold bath was resorted to.

In all cases the routine treatment may be summed up as follows: The patient's temperature was taken; he was then placed in a low bath tub, in which the water was exactly of the same temperature; he was rubbed with large gritty sponges until redness of the skin was induced; this was followed by the turning on of the spray, the impact of which maintained the counter-irritation. After five or ten minutes the patient was removed from the bath and thoroughly rubbed with the sponges. If the temperature had not sufficiently subsided he was again placed in the bath and the process repeated until the temperature was reduced to the neighborhood of 100° F.; in the meantime he was given, either by the stomach or hypodermatically, $\frac{1}{20}$ of a grain of strychnine, $\frac{1}{40}$ of a grain of atropine, $\frac{1}{4}$ of a grain of morphine, and 20 drops of the tincture of digitalis, followed by a teaspoonful of aromatic spirit of ammonia in a glass of milk. The cases did well, and while we would not disparage the employment of the cold bath, we would insist that its efficiency must depend upon the energy of the friction, to secure a cutaneous afflux of blood.

In mild cases, in which the temperature was 101° F. or 102° F., from 5 to 10 grain doses of antipyrin or antifebrin relieved the headache, and usually the cramps, and reduced the temperature. We have not observed any unfavorable symptoms after the use of either of these drugs in properly selected cases. When we have used them we have usually accompanied their administration with applications of cold to the head, either by the ice cap or the cold spray, preferably the latter. The cold spray, if applied to the head and nape of the neck, will rapidly reduce the temperature, and time may be gained by using friction upon the back and upon the chest and extremities at the same time.

Alcoholic stimulants should be used in the large majority of cases. They favor increase of the peripheral circulation and invigorate the flagging heart. Blood-letting was resorted to in a single case, and upon the following indications: When brought into the accident-room the temperature of the patient was 103.6° F., and he presented no extraordinary symptoms. He was given $\frac{1}{60}$ of a grain of atropine, with $\frac{1}{8}$ of a grain of morphine. Friction was applied

to the chest and trunk; he was directed to lean over the bath-tub, and the cold spray was applied to the head, neck, and shoulders. The respiration became impeded; the man gasped for breath; the lips, ears, and finger-nails became blue, but not the general surface. Cheyne-Stokes breathing appeared. The man was bled to the extent of eight ounces, with immediate relief. He was sent to the Pennsylvania Hospital and returned to work on the following day.

The cold spray has in our hands been a most beneficial agent. The temperature of the water used varied from 40° F. to 55° F., but the force with which it was applied enhanced its usefulness, as the process practically amounted to active flaggelation without inducing pain, and was promptly followed by redness.

As soon as active treatment was discontinued, or when practicable during its continuance, the patient was kept beneath the cool-air blast. One who has never seen the benefits of such a blast cannot appreciate its utility. Under active friction of the skin in the air-blast in many cases the temperature promptly subsided. The headache was invariably alleviated. The cool-air blast is, in our opinion, a most valuable adjunct. With it should be conjoined active friction, or if the patient is quiet, he should be in the recumbent posture, covered with a thin sheet, leaving the face free.

The regulation treatment in cases in which the temperature was subnormal (heat-exhaustion), consisted in the administration of stimulants, usually alcoholic, although hot drinks may with advantage be combined with alcohol. Rest in the recumbent posture is imperative.

It is probable that in the cases in which the temperature was practically normal the men were malingerers; but as they were few, they have not been separately considered.

SURGICAL DISEASES OF THE GALL-BLADDER AND GALL-DUCTS; WITH A REPORT OF FIVE CASES.

BY MILES F. PORTER, M.A., M.D.,[1]
PROFESSOR OF SURGERY AND CLINICAL SURGERY, MEDICAL DEPARTMENT TAYLOR UNIVERSITY, FORT WAYNE, IND.

CASE I.—Mr. R., seventy years old, German, a shoemaker, after suffering for about three years with marked jaundice, pain in the hepatic region, distention of the stomach and bowels with gas, and having nearly died from hemorrhage from a slight scalp-wound of the vertex received during this period, was placed in the hospital under the care of Dr. H. McCullough, who, with myself, regarded the case as one of malignant disease. The patient lived but a short time thereafter, and a *post-mortem* examination revealed the existence of inflammatory obliteration of the common duct, while the gall-bladder was closely contracted about a gall-stone, and was attached to the transverse colon, with which it communicated through a small opening. In the cystic duct was a second stone. The hepatic duct was patulous, so that some bile escaped through it and the remains of the gall-bladder into the large intestine.[1]

CASE II.—Mrs. P., fifty-two years old, a married woman, suffered for several years from what she termed "wind in the stomach," and was rubbing her abdomen to allay the pain during an attack, when she discovered a tumor, for which she consulted me. The tumor was not tender, but manipulation of it occasioned distress in the epigastric region. A diagnosis of gall-stones in the gall-bladder was made, and cholelithotomy was performed. From this the patient recovered. She is at the present writing in good health, but has a hernia at the site of the incision. She had for years also suffered from an anal fistula, and this was operated upon subsequently.[2]

CASE III.—Mrs. A., fifty years old, was seen by me, in consultation with Dr. H. McCullough, October 20, 1891. She gave a history of pain in the stomach, coming on at irregular intervals for several years, and accompanied by eructation of gas. She had never been jaundiced until the present illness. During the last illness she was unable to retain anything on the stomach. Examination showed the stomach to be somewhat distended with gas, which by pressure could be made to pass into the bowel, always with gurgling. No tumor could be detected. A diagnosis of obstruction at or near the pylorus and obstruction of the common bile-duct, due to an unknown cause, was made. Ten days after this visit the woman died. At the *post-mortem* examination the gall-bladder was found closely contracted about a calculus, and the common duct and duodenum, close to the pylorus, very much obstructed by adhesions resulting from a peritonitis of old standing.

CASE IV.—Mrs. S., fifty-four years old, the mother of five children, in 1865 began to have severe "dead" pain in the right hypochondrium, ceasing suddenly. These pains recurred at intervals of from two weeks to two years until 1885, when, after doing some hard work, she was rather suddenly seized with the same pain, which continued to trouble her at intervals for eighteen months, when it disappeared, and she grew fleshy and strong. In 1889 she commenced losing flesh, and complaining of pain in the same region, remittent in character, accompanied by pronounced jaundice and intense itching of the whole cutaneous surface. Soon after this last attack commenced, there developed pain and a tumor in the left hypochondriac region. The patient has suffered much from piles, and lately from prolapsus ani, and complains greatly

[1] Read before the Indiana State Medical Society, May 13, 1892.

[1] This case was reported and the specimens shown to the Fort Wayne Academy of Medicine.

[2] A report of this case will be found in the Transactions of the Indiana State Medical Society for 1889.

of distention of the stomach and bowels with gas. I saw her on January 15, 1892, when the foregoing history was obtained. She was much emaciated, deeply jaundiced, and had the expression of one who had suffered much.

On examination, the liver was found enlarged and hard; a tumor of the size and shape of the spleen, but rather harder, was detected in the left hypochondrium. A diagnosis of obstruction of the common or hepatic duct, probably by gall-stones, with enlargement of the liver and spleen, was made. The probability of malignancy was also entertained. Laparotomy was performed on February 20th, with the understanding that it might accomplish no more than the establishment of the diagnosis. The gall-bladder was found obliterated, and the hepatic or common duct bound to the posterior wall of the abdominal cavity, and containing three calculi, one of the size of a filbert, the others slightly smaller. The liver was slightly hobnailed in appearance, and hard. After trying to dislodge the calculi, and failing, the abdomen was closed. The case went on well until the morning of the fourth day, when the pulse became so weak that the nurse could not count it, and the patient complained of suffocation. At 2 P.M. on the same day I saw her, when the pulse was 147, the temperature 99.5° F., and the sense of suffocation less. Whiskey had been given, and I ordered nothing else. By 6 P.M. the pulse was down to 93, and all again went on well until the fifteenth day, when the woman complained of being cold; the pulse was 152, and weak. A hypodermatic injection of twelve drops of tincture of digitalis was given, with one-fiftieth grain of strychnine. The pulse soon fell to 80, and continued between that and 90 until the twenty-third day, when the patient went home. The strychnine was continued for several days after her return home.

The stitches were removed on the eighth day, the wound having healed perfectly. Up to April 12th the patient was improving; the stools were usually well-colored; there had been no itching since the first few days after the operation, unless she took morphine, which she has had to do for the pain, which still continues, though in less severe a degree. She now takes one-sixteenth of a grain of morphine twice daily, whereas before operation she took a quarter of a grain. The jaundice is still marked, though less decided since the operation. The greatest inconvenience results from gaseous distention of the bowels and stomach.

CASE V.—Mrs. D., a German, thirty-three years old, mother of two children, was referred to me by Dr. Carl Schilling. She commenced having cramps in the stomach eleven years ago; they were very severe, and would cease suddenly. They continued to trouble her for eight years, since which time she has had none, but has complained daily of severe burning pain, commencing in the right hypochondrium, and extending to the epigastrium and back. One year ago she first noticed a lump in her side. There is no clear history of jaundice, though the woman states that she has had "liver spots." Gas in the stomach and bowels has greatly distressed her during the whole of her illness. Examination revealed a freely movable tumor, apparently solid, in the region of the gall-bladder. A diagnosis of distention of the gall-bladder with gall-stones was made. Laparotomy was performed February 29, 1892. On opening the peritoneum, an elastic tumor was found; on introducing a trocar and canula, pus flowed freely. The gall-bladder was emptied, and explored with the finger and probe, but no stone was found. There were no adhesions. The bladder was stitched to the abdomen, and a rubber drain was left in. A sharp attack of peritonitis on the third day disappeared like magic under free catharsis from the use of salines. The stitches were removed on the eighth day, when the wound was healed, except where the drain had entered. The patient was allowed to get up on the fifteenth day, and left the hospital for her home on the twentieth day. The drain was removed on the twenty-third day. At no time was there more than the smallest quantity of pus in the discharge. At first this consisted of mucus, with very little bile, but subsequently it became clear bile, less profuse, and the woman expressed herself as well.

In three of the five cases here reported there was practically obliteration of the gall-bladder; that is, the viscus was so contracted, bound down, and changed, as to make it impossible to stitch it either to the abdominal wall or to the intestine. That this condition is of more frequent occurrence than we would be led to believe from the literature I feel sure, and it should be borne in mind in giving opinions in similar cases.

Kocher[1] performed a cholelithotripsy in a case in which the shrunken gall-bladder would not permit of the performance of the cholecystenterostomy.

Robson,[2] of Leeds, reports a case in which the gall-bladder was so far from the surface that he had to use the omentum to shut out the cavity of the peritoneum by first stitching the former to the gall-bladder, and then to the parietal peritoneum.

Shepherd,[3] of Montreal, used the liver and omentum for the same purpose in a similar case.

The use of contiguous tissues for the purpose indicated in the cases referred to offers hope in similar cases otherwise hopeless, and might have been applied in Case IV; but I feared that the woman would not withstand the shock of so prolonged an operation. Greater emphasis should be placed upon the diagnostic significance of the fermentation and consequent accumulation of gas in the stomach and bowels, together with pain and distress in the stomach. These phenomena also add evidence to the importance of the bile as an antiseptic. Piles and fistulæ, and rectal distress, are also of diagnostic significance. Of course, in Case III the gaseous

[1] Annual of the Universal Medical Sciences, vol. iii, 1891.
[2] Annals of Surgery, vol. xiv, No. 5.
[3] Ibid., vol. xii, p. 333.

distention of the stomach was in part due to the mechanical obstruction.

While empyema and dropsy of the gall-bladder are usually due to gall-stones, they may be due to other causes, and may be susceptible of cure by cholecystotomy. H. C. Dalton[1] reports two cases of stricture of the gall-ducts due to inflammatory action from causes other than calculi.

Cases I and V further illustrate the difficulty of correct diagnosis.

Langenbuch,[2] who had performed twenty operations on the gall-bladder at the time, said: "Exploratory incision only will determine exactly with what kind of tumor we have to deal."

Tait[3] made a median section below the umbilicus for what he supposed to be a parovarian cyst, and found a distended gall-bladder.

Mears[4] made an exploratory incision in the lumbar region, in a case suspected to be one of floating kidney, but found a distended gall-bladder, with the cystic duct plugged by a calculus. His patient recovered.

West Hughes,[5] of Los Angeles, says: "So far as I can ascertain there have been only two other cases of non-adherent suppurating tumor of the gall-bladder successfully operated upon. There have been several such cases reported with fatal result, death being caused by suppurative peritonitis, due to the entrance of the contents of the gall-bladder into the peritoneal cavity. It would seem far better to operate in two stages, when this danger can be entirely eliminated." This danger of contamination of the peritoneum eliminated, there can be no doubt but that the completion of the operation at once is preferable. Careful sponge-packing will not always suffice. My experience leads me to believe that the contamination comes not so often from leakage at the side of the canula at the point of perforation, but from the pus that flows over the extremity of the instrument and down upon abdomen, hands, sponges, etc. This may be effectually prevented by first passing the trocar and canula through a piece of dentists' rubber dam of sufficient size. Then, with the hand grasping the instrument between the abdomen and rubber, trocar and canula are introduced; the trocar being removed by an assistant, the pus flows over the rubber, leaving sponges, hands, and wound clean. If thought advisable, the cavity can be washed out before removing the canula. Had this idea occurred to me years ago I might have saved my patients some discomfort and myself much worry.

[1] Annals of Surgery, vol. ix, p 99, 100.
[2] Annual of the Universal Medical Sciences, 1890, pp. 46, 47.
[3] Loc. cit.
[4] Annals of Surgery, vol. x, p. 241.
[5] Ibid., vol. xii, p. 338.

In Case IV, as in a case of gastrostomy already published,[1] I believe the hypodermatic use of digitalis prevented death. I desire to urge the use of digitalis in this way, ofttimes advantageously combined with strychnine, not only after abdominal section, but in all cases in which death threatens from heart-failure.

In all, five cases are here reported: Four of gall-stones, and one of empyema of the gall-bladder; there was one death from obstruction of the duodenum, and one from cholemia; there were two cholecystotomies, one for stones and one for empyema, both cured. There was one incomplete operation, the case being somewhat benefitted, though still suffering, and threatening soon to die of cholemia.

47 W. WAYNE STREET.

CLINICAL MEMORANDA.

ALMOST TOTAL DESTRUCTION OF THE VELUM PALATI CORRECTED BY AN ARTIFICIAL SOFT PALATE, PRODUCING NOT ONLY GREATLY IMPROVED SPEECH, BUT AN IMMEDIATE INCREASE OF AUDITION.[2]

BY JAMES THORINGTON, M.D.,
OF PHILADELPHIA.

L. B., a girl, sixteen years old, born of English parents in Philadelphia, doing housework at home, was small in stature and features. The family history was good. Menstruation commenced a year ago, and has been normal and regular.

Her general health was good until July, 1884, when she contracted scarlet fever, followed two weeks later by diphtheria; she was confined to bed and to the house for the subsequent six months, on one occasion being considered beyond recovery. The patient states that her throat was the chief point of treatment, various washes, gargles, swabbings, etc., being used. No positive history of cauterization of the throat could be obtained. In one instance so much force was employed in making a throat-examination, with the handle of a spoon, that four loose (deciduous) teeth were knocked out, and the left commissure of the mouth was cut or lacerated for a distance of half an inch, leaving an irregular skin-scar.

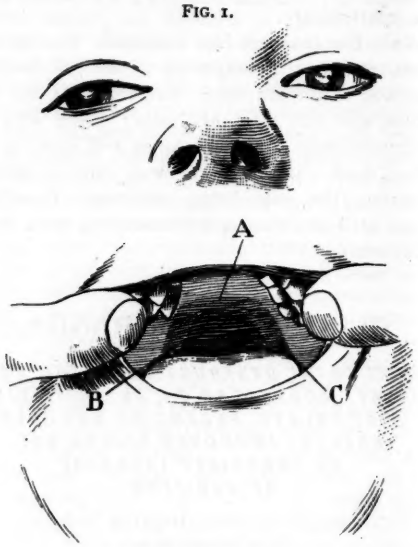
The patient's voice has a most marked nasal twang, and, while speaking, the alæ nasi can be plainly seen to open and close the nasal entrance. No history whatever of food or liquids at any time passing into the posterior nares and out through the nose could be obtained.

The patient is hard of hearing; she watches the speaker's lips carefully, and states that ever since the attack of scarlet fever there has been a constant discharge of a very offensive-smelling and light-colored pus

[1] Journal American Medical Association, vol. xi, p. 123.
[2] This case was presented at the Throat Clinic of the Jefferson Medical College Hospital, in January, 1892, and was placed under my care by Prof. J. Solis-Cohen, for treatment of the pathologic conditions and supplying the deficiency in the soft palate with an artificial appliance.

from both ears; the discharge is at times quite thick ("creamy"), and at other times watery in consistence. She has occasionally noticed that in the act of coughing, sneezing, or blowing the nose, air passes through and out of the ears. She has not had medical attendance or treatment since convalescence.

FIG. 1.



Mouth held open with index fingers.

A. Uvular band or cicatrix. B. Right palatine pillars, shown as one. C. Left palatine pillars, shown as one.

Looking into the open mouth (see Fig. 1, half the normal size), all of the permanent teeth are seen to be present, except the two upper cuspids, which are deciduous. The upper teeth are not regular in position. (See edges of the roof-plate, F, in Figs. 2 and 3.) The roof of the mouth is narrow and deep. The tongue appears normal. The fauces show complete absence of the uvula, and in its stead a broad (antero-posterior) cicatricial band, bright-red in color as compared with the surrounding pale tissues, extending across and connecting at the top the lateral pillars on each side. (A, in Fig. 1.) The lateral pillars—the right more particularly—are also broad cicatricial bands, and lie close together, almost as one, at their junction with, and for a short distance below, the uvular band, but may be separated with the end of a probe. (B and C, Fig. 1.) The tonsils are absent. In phonation no movement can be seen to take place in the right anterior pillar; the right posterior pillar acts slightly; the left pillars contract somewhat, as does also the uvular band, especially its left half. Digital examination proves the right anterior pillar to be a firm, unyielding cicatrix, without any indication whatever of muscular tissue. The left pillars, uvular band, and right posterior pillar, while composed of a great amount of cicatricial tissue, have some muscular fibers remaining.

The buccal pharynx—that part of the pharynx seen on looking into the widely-opened mouth—is one large, stellate, or spider-shaped cicatrix, having its body in the center of the buccal pharynx, and its many radiations or branches passing in as many directions. Viewing the post-nasal space with the mirror the left tensor palati muscle is seen to stand out prominently, as compared with its fellow of the opposite side, which consists of cicatricial tissue and has but slight muscular action; as a result, the entrance to the post-nasal space from below is of irregular shape. (K, in Fig. 2.) The various parts, as seen in the post-nasal space—septum, turbinates, entrance to Eustachian tubes, etc.—present no abnormality, except a chronic thickening of the mucous membrane; the otherwise normal condition of the Eustachian tubes having an important bearing on the result of the treatment, as will hereafter be explained. The larynx presented no abnormality.

The auditory auricles are normal; the auditory canals, after the removal of the accumulated pus, were found narrow, deep, and macerated, but, owing to sensitiveness or fear on the part of the patient, it was impossible to obtain a satisfactory view of the membranes or ossicles. Air was forced through the ears. Hearing by the watch was: Right, 5 inches; left, 4 inches.

The treatment resolved itself into three parts: First, for the post-nasal and pharyngeal changes; second, for the otorrhea; and, third, the procuring, for the relief of the altered condition of the parts, of an artificial appliance that would improve speech and, possibly, hearing. The parts being so contracted and muscular tissue scarce, the idea of surgical interference was not entertained.

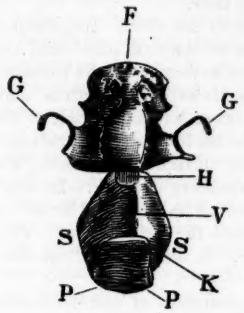
The patient being in apparently good health, there was no indication for constitutional treatment, and none was given. In consultation with a dentist it was considered possible (though not definitely promised) to make a velum that would assist the patient's speech and, perchance, the audition; this possibility being based on the assistance that it was hoped or anticipated could be obtained from the muscular fibers in the right posterior and left pillars, so as to act on the artificial velum. While this velum was being made, attention was given to the treatment of the throat and ears. For the former, alkaline washes of various strengths were used to keep the parts clean and free from the thick, tenacious mucus that would otherwise accumulate. Under this treatment the secretion diminished in quantity and in tenacity, and with occasional applications of a weak iodine-solution the thickening of the membranes was much reduced.

The auditory canals were kept clean by means of a weak solution of hydrogen dioxide, dried with absorbent cotton, and daily insufflations of boric acid. After a few days of this treatment the discharge lost its offensive odor, and at the end of nine weeks there was a cessation of the discharge from the right ear, and in the left at the end of twelve weeks. Cerumen appeared at about this time, the first noticed since the attack of scarlet fever. A watch could now be heard with the right ear at 7 inches; with the left at 7 inches. Each ear showed absence of drum-membrane and ossicles. The promontory could be seen, and the foot of the stirrup resting on the oval window.

Figs. 2, 3, and 4 show the upper, under, and right lateral surfaces, respectively, of the artificial palate, one-half the natural size. F, in each figure, is the roof-plate, or the plate that fits to the roof of the mouth; it is composed of vulcanized rubber, and is exactly the same kind of a plate that is used for an upper set of false teeth. G G, in Figs. 2 and 3, are gold clamps that fasten

round the first molar teeth, to hold the roof-plate F *in situ*. I, in Fig. 3, is the fastened end of a narrow piece of gold that runs backward through the substance of the roof-

FIG. 2.



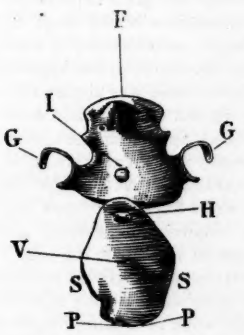
Upper surface of artificial palate.

F. Roof-plate. GG. Gold bands. H. Upper part of gold stud (*vide* H, in Fig. 3). K. Heel of velum. P, P. Posterior or pharyngeal margin of velum. S, S. Lateral or arch surfaces of velum.

plate to H, Figs. 2 and 3, where it is broadened out into a stud, which holds the velum V, Figs. 2, 3, and 4.

The velum is composed of soft red rubber, is very pliable, and takes its original shape as soon as the pressure is removed. K, Figs. 2 and 4, is a (hollow) prominence, or heel, which fits into the naso-pharyngeal

FIG. 3.



Under surface of artificial palate.

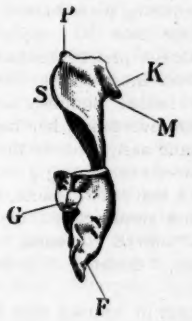
I. Fastening of gold band that passes to form the stud H (Figs. 2 and 3). (Other letters have the same references as in Fig. 2.)

space. M, in Fig. 4, shows the anterior part of the heel, which approximates the back of the uvular band, but does not exert any pressure of itself, though just near enough to receive pressure at the time of muscular contraction. The upper margin of the heel, when in position, will be just below the floor of the nares. The irregular shape of the front of the heel will be noticed in Fig. 2.

Placing this unique piece of workmanship *in situ*, it will be understood from the description given that, the velum being in repose, the edges marked S and S lie accurately against the palatine arches, and that the posterior or pharyngeal margin, P P, Figs. 2, 3, and 4, stands out or hangs away from the pharyngeal wall, leaving a space of less than two-eighths of an inch, which is quite sufficient to allow of free respiration through the nares, and for thin secretions to pass down from above.

When the patient phonates with mouth wide open, the left arch and tensor palati contract at S, Fig. 2, and force the velum up and back; at the same time the pharynx contracts, comes forward and meets the velum at P P, thus completely closing the nasal passage, and directing the voice forward through the mouth, the artificial velum acting the part or taking the place of the natural velum in opening and closing the nasal passage, as required in talking or swallowing.

FIG. 4.



M. Anterior aspect of heel. K. Right side view of artificial palate.
(Other letters have the same references as in Figs. 2 and 3.)

As for the velum itself, much is to be said in its favor The danger of it becoming detached and swallowed is almost *nil*, when it is observed how securely it is held in position by the stud H, Figs. 2 and 3. Owing to the size of the velum, in comparison with the smaller size of the laryngeal opening, it would be impossible for it to take that course, should it become detached. The risk of irritating the parts with which it comes in contact was carefully considered, and for this reason the soft rubber velum was first made; and as there has been no inflammation or unpleasantness following its use, a hard rubber velum is now in process of construction. One important reason, perchance, that the velum has not irritated the fauces is on account of the insensitive cicatricial condition of the parts.

Secretions accumulate on its upper surface, especially if thick, and, as a consequence, there is a reduction in audition, no doubt from pressure, or plugging of the Eustachian tubes. This is the only inconvenience resulting from the use of the velum, but one that the patient can, and does, easily remedy by removing and cleansing the velum and the parts. There is no difficulty in this; the patient passes the index-fingers to G G, Fig. 2, and, pulling downward on the gold clasps, the plate falls, is lifted from the mouth and cleansed in tepid water; it is easily and securely re-inserted by passing it well back and bringing the gold clasps to the edge of the first molars and pressing upward.

The velum has been made as light and thin as possible, and accurately approximates the buccal pharynx

when in action. Were it permissible to allow more space than the present two-eighths of an inch between its posterior edge and the buccal pharynx when in repose there would not be so much, if any, retained secretion, but this cannot be accomplished without leaving an opening into the nasal passage during the action of the velum, and thus neutralize the use for which it is intended. It is hoped that with the use of the velum the mucous membrane may continue to improve and the secretion remain thin enough to flow freely at all times through the space allowed, and by the aid of nasal inspiration the patient be able to draw the mucus into the throat. By reason of the retained secretion the patient is not allowed to wear the velum during sleep.

Two mechanisms being required in speech—the laryngeal and oral (the vibrator and resonator)—and normal speech requiring perfect coördination of the two, the velum in this case, by supplying the previous vacancy, gives almost perfect resonance as the result, and does away with most of the former nasal twang. This twang will further diminish and gradually pass away as the patient overcomes her habit of closing the nostrils with the alæ nasi. Prior to the use of the velum, in pronouncing words containing a *c* or *s* followed by a vowel, there was a marked *th*-sound, but this is rapidly leaving, and is now almost gone. Six was pronounced "thix"; seven, "theven"; sound, "thound"; Susie, "Thuthie"; cider, "thider"; Cincinnati, "Thinthinnati," etc.

The improvement in hearing that has resulted from the use of the velum is an advantage that equals, if it does not exceed, the bettered speech. As the title of this article states, the improvement in audition was immediate (R. and L. = 20 inches), and has increased gradually until at the time of writing, six weeks from the first use of the velum, the hearing for the watch has reached, right and left, 31 inches. As soon as the velum is removed, the audition for the watch falls to, right and left, 7 inches, showing that the improvement is most likely mechanical—*i. e.*, from the support given to the Eustachian tubes. Had the entrances to the tubes suffered from ulceration, as did the other tissues, it is not likely that the velum would have improved audition.

With this improved audition and speech the patient becomes a better and happier member of society, and now enjoys her surroundings and associates with greater satisfaction than at any time since her recovery from the scarlet fever. Prof. Cohen, who has just examined the case, pronounces it the most successful result he has ever witnessed in such extensive devastation of tissue.

1630 ARCH STREET.

ANEURISM OF THE AORTA IN A CHILD OF FOUR AND A HALF YEARS.

BY R. A. H. MACKEEN, M.D.,
OF COW BAY, CAPE BRETON.

IN the summer of 1889 I was called to see M. M., a little girl, four years and nine months old. Her mother stated that since the preceding spring the child had been troubled with a continuous, hacking cough, for which various remedies had been tried without avail. The child had failed somewhat in strength and suffered from shortness of breath. Otherwise she was able to play with her companions as usual. The family history was good. She had never suffered from severe illness, but in the previous winter, while running, she had fallen, striking her breast heavily upon the doorstep. Beyond a feeling of soreness, this accident did not occasion any inconvenience at the time.

Examination of the chest. Inspection showed a pulsating swelling in the first intercostal space just to the left of the upper extremity of the sternum. The pulsation was distinctly expansile, with a slight thrill, most distinct at the lower and outer part of the tumor. The breathing in the left lung was free and not interfered with, except over the surface of the tumor, where there was absence of respiratory murmur. In this region a systolic murmur could be heard. The left radial pulse was somewhat behind the right in time. The voice was not interfered with. A diagnosis of aneurism of the aorta was made.

The only explanation of non-involvement of the left laryngeal nerve would be that the aneurism must have arisen on the left side of the ascending part of the aorta and below the point at which the nerve crosses the vessels. Judging from its situation, it is not probable that the aneurism had any connection with the ductus arteriosus. The patient was afterward examined at my request by Dr. Wm. McKay, who agreed in the diagnosis. In the following summer I had the opportunity of showing the case to Dr. McPhedran, Associate Professor of Medicine in the University of Toronto, who, after a very careful examination, agreed with the previous opinion.

At the beginning of the next winter the patient was seized with a rigor and pain in the right side. There were coldness of the skin and great depression. Reaction did not set in for twenty-four hours, when there was elevation of temperature, accompanied by rusty expectoration. Pneumonia had developed in the upper lobe of the right lung. Though the crisis was apparently reached in due time, the lung did not close up, and soon underwent degeneration. Death resulted in the course of two months. It is to be regretted that no autopsy could be obtained.

It is safe to assume that at the most the patient could not have been more than four years and three months old when the aneurism developed, and her extreme youth lends special interest to the case. Henoch, with his large experience, never saw an aneurism in so young a child. Two cases were recently reported in the *British Medical Journal*—one in a patient three years old, and the other in a child four years old.

MEDICAL PROGRESS.

Cerebral Surgery.—HITZIG (*Berliner klin. Wochenschrift*, 1892, No. 29, p. 713) has reported the case of a mason, twenty-nine years old, who, following a blow in the right frontal region, complained of pain at the site of injury, with impairment of memory, defective intelligence, and attacks in which paresis of the left hand appeared, while the mouth was drawn to the left; speech and deglutition were likewise slightly affected. Subsequently, vision became impaired upon the right, and then upon the left. There had been no vomiting; and there was no alteration of the pulse. The head was bent

strongly forward and slightly to the left; the left shoulder drooped somewhat. There was bilateral papillitis and concentric limitation of the visual fields. The muscles of the right side of the face were paretic. The tongue was protruded a little to the right. There was also loss of power in the left upper extremity. There was some weakness of lower extremities, slightly the greater upon the left side. Sensibility was not deranged. The knee-jerks were exaggerated, the left in greater degree than the right. Ankle-clonus was present upon the left, and the skin-reflexes were exaggerated. In the right temporal region, in a situation corresponding with the anterior half of the origin of the temporal muscle, was a doughy tumefaction, painful upon pressure. A diagnosis of a tumor of the bone exerting pressure upon the brain in the temporal region was made, and operative procedure decided upon. A large extent of bone was removed in the right temporo-parietal region, leaving an opening in the skull of about 3½ by 4¼ inches. The bone in places was thin; in others, thickened. A large growth was found arising from the brain and penetrating the dura. The neoplasm was carefully removed. It weighed nearly nine ounces, and proved to be a mixed sarcoma. The patient recovered absolutely from the operation, without noteworthy aggravation of his previous paretic condition.

Carcinoma of the Cecum.—As the result of a careful study, MATLAKOWSKI (*Deutsche Zeitschrift f. Chirurgie*, Bd. xxxiii, H. 4 u. 5, 321) concludes that carcinoma of the cecum is not rarely a most chronic condition that may exist for years without giving rise to symptoms other than slight constipation and the presence of a tumor. The prognosis of operation at this stage would be most favorable. Resection, with immediate enterorrhaphy, is the ideal operation. If the patient come under observation with symptoms of intestinal obstruction, neither resection nor intestinal anastomosis is to be undertaken, but an artificial anus is to be established in the small intestine as near as possible to the ileo-cecal valve. When the patient has regained strength, resection and enterorrhaphy may be performed or an anastomosis established. An artificial anus should never be established after resection of the cecum has been performed, except in case of obstruction; instead, an enterorrhaphy should be performed; or, if this be impossible, an anastomosis should be established. If resection is impossible, or seems contra-indicated by the debilitated condition of the patient, an anastomosis should be established. If the carcinomatous disease be circumscribed and not generalized or disseminated, and resection and enterorrhaphy or anastomosis in one sitting appears too tedious or too dangerous, enterorrhaphy or anastomosis, excluding the tumor from the abdominal cavity, may be first performed, and as the condition of the patient improves, the growth may be extirpated. In favorable cases resection of the carcinomatous cecum and primary enterorrhaphy may be followed by curative results, lasting for years, as indicated by the general condition of the patient and the functional activity of the bowel.

Eclampsia.—OLSHAUSEN (*Sammlung d. klin. Vorträge*, No. 39, 1892) considers eclampsia an intoxication, dependent upon interference with the function of the kidneys, usually acute. There is most frequently an acute or subacute change in the parenchyma of the kidney, less commonly chronic nephritis, with acute fatty degeneration. Exceptionally, such conditions as compression of the ureter or intoxication by corrosive sublimate or carbolic acid are present. If the eclamptic attack cease without interrupting the pregnancy, the convulsions are almost never repeated at the time of birth. It has not been determined whether or not this is dependent upon the death of the child. The prognosis is governed by the possibility of speedily terminating the labor and by the number and violence of the attacks. A poor pulse and a high temperature are of unfavorable prognosis. True puerperal eclampsia, setting in soon after labor, is less dangerous than eclampsia setting in late. Attacks are sometimes preceded by aurae, consciousness not being entirely lost. Albuminuria is rarely absent. Morphine, in large doses, is indicated; but if contra-indicated by small pulse and contracted pupils, chloral should be given by enema. In the case of a multipara, the amnial sac is to be ruptured as early as possible, to induce or to inaugurate labor. As soon as the cervix offers no obstruction, the forceps is to be applied. Version and incision of the cervix are to be sparingly employed. In an exceptional case, in the interest of the mother, or, if the parent be moribund, in the interest of the child, Cæsarean section may be indicated.—*Centralblatt für die gesammte Therapie*, 1892, x, 7, p. 426.

Gastrostomy for Stricture of the Esophagus in a Child of Four.—At a meeting of the Clinical Society of London, CHITTON (*Lancet*, 1892, 3588, p. 1244) reported the case of a girl, four years old, who, when seen, seven weeks after swallowing some caustic soda, was unable to swallow anything, while a bougie was arrested at a point six inches from the teeth. To secure absolute rest for the esophagus, the little patient was fed by nutrient enemata. At the expiration of two months, as no instrument could yet be passed, the esophagus was opened in the neck, in the hope of reaching the stricture. The obstruction was found, however, to be within the thorax. The wound was closed, and the first stage of gastrostomy undertaken by means of hare-lip pins. Five days later, the stomach was opened and the child was fed through the gastric fistula. After the lapse of five months, a small bougie was made to pass through the stricture, and after many months of varying success a No. 14 esophageal bougie was passed with ease. In the following year, this large bougie was passed about once a month, and the plug removed from the gastric opening, which was gradually made to close by application of the actual cautery. The girl was ultimately restored to perfect health, presenting herself every six weeks to have the bougie passed.

Sudden Death from the Presence of a Spool-worm in the Trachea.—HEUSSER (*Corresp.-bl. f. Schweizer Aerzte*, No. 14, p. 443) reports the case of a boy, eight years old, to whom he was hurriedly called on account of interference with respiration of sudden onset and for which no cause was evident. Death took place, and the autopsy revealed the presence of a spool-worm at the bifurcation of the trachea, and projecting for some

distance into one of the bronchi. The assumption is that the worm found its way into the pharynx, and thence was aspirated into the trachea.

The Renal Function in the Fetus.—RISSMAN (*Centralbl. f. Gynäkol.*, 1892, No. 26, p. 497) has reported the case of a unipara who gave birth to an eight months' male fetus that presented pes equinus and bilateral cryptorchismus. The child, which lived for four and a half hours, was in other respects well-developed, but there was entire absence of the kidneys and ureters. The bladder was small and presented a depression indicative of the point at which the ureter should have entered. Both testicles, with their adnexæ, lay in the false pelvis.

Unilateral Syringomyelia.—At a meeting of the French Society of Biology, DÉJERINE (*La Méd. Moderne*, No. 30, p. 489) reported the case of a man, fifty-five years old, who presented the symptoms of syringomyelia, confined, however, to one side of the body. The patient died of pneumonia, and the autopsy disclosed the existence of a gliomatous cavity involving the right side of the cord from the cervical region to the lumbar enlargement, with its maximum of development at the cervical enlargement.

Disorders of Speech in Paralysis Agitans.—ROSENBERG (*Berliner klin. Wochenschr.*, No. 31, 1892, p. 771) has reported a case of paralysis agitans in a man, sixty-two years old, in whom the disease had existed for thirty years, and who presented disturbances of both articulation and phonation, dependent on participation in the tremor of the muscles of the lips, cheeks, tongue, and palate, as well as of the vocal bands.

The Detection of Tubercle-bacilli in Sputum.—KAUFMANN (*Centralbl. f. Bakteriol. u. Parasitenk.*, Bd. xii, No. 4 u. 5, p. 142) has found that tubercle-bacilli contained in sputum spread upon cover-glasses, fixed and stained in the usual way, are not decolorized by exposure to boiling water for from one and a half to three minutes, while most other bacteria lose their color.

THERAPEUTIC NOTES.

Paraldehyde as a Diuretic.—In a case of senile arterial degeneration, with mental depression, restlessness, insomnia, and valvular disease of the heart, other hypnotics failing, SYSON (*Lancet*, No. 3595, p. 195) employed paraldehyde, both in full medicinal doses and in small doses repeated at short intervals. Restlessness and sleeplessness were in a satisfactory degree controlled; in addition, a distinct diuretic effect was observed, intercurrent dropsy being relieved.

For Hemorrhoids.—

℞.—Morphinæ		gr. v.
Hydrarg. chlor. mit.		ʒj.
Glycerin.		ʒiv.
Bismuth subnitrat. } Vaselin. }	āā	ʒjss.

M. et ft. unguent.
S.—Apply topically. ALLINGHAM.

Hydrastis Canadensis for the Vomiting of Pregnancy.—FÉRODOW, a Russian gynecologist, has controlled obstinate vomiting in four cases of pregnancy by the administration of twenty drops of fluid extract of hydrastis four times a day. The efficacy of the remedy is said to depend upon a lowering of the blood-pressure, relieving the engorgement of the uterus, and upon a sedative influence upon the motor nervous centers and the gastro-intestinal canal.—*Gazette Méd. de Paris; Lyon Médical*, No. 31, p. 483.

For Hay-fever.—

℞.—Morphinæ sulphat.		gr. ss.
Cocaine hydrochlor.		gr. j.
Menthol.		gr. iij.
Bismuthi carbonat.		gr. viij.

M. et ft. pulv.
S. Use as a snuff.
WELFORD, *Canadian Practitioner.*

The Removal of Deposits of Pigment in the Skin.—GÖNNER (*Correspondenzbl. f. Schweiz. Aertze*, No. 14, p. 462) states that pigment-hypertrophies can be removed by applying, at bedtime, a thin layer of soft soap, which is removed in the morning. In the course of a few days the skin peels off, and the deposit of pigment has disappeared. If pain and redness occasion distress, borated or salicylated vaselin may be applied.

For Dysentery.—

℞.—Morphinæ sulphat.		gr. j.
Magnesii sulphat.		ʒj.
Acid. sulphuric. dil.		fʒij.
Aquæ		fʒiv.—M.

S. A tablespoonful every three hours.
BARTHOLOW.

The Treatment of Rabies.—TIZZONI and CENTANNI (*Deutsche medicin. Wochenschr.*, No. 31, p. 702) have, by precipitation with alcohol, been able to obtain from the blood-serum of animals rendered immune to rabies, a body that, dissolved in water, is also capable not only of conferring immunity, but also of effecting a cure when the disease is already developed.

For Itching.—

℞.—Menthol.		gr. xij.
Alcohol.		ʒjss.
Aquæ		ʒiij.
Acid. acetic.		ʒj.—M.

S. Apply by means of a sponge.
—*Rev. de Thér. et Méd.-chir.*

For Gonorrhea.—MANGANOTTI recommends from three to five injections daily of from a three to a five per cent. solution of ichthyol in the treatment of gonorrhea.—*Correspondenzbl. f. Schweiz. Aerzte.*

For Fissured Nipples.—It is recommended that egg-albumen be applied to fissured nipples after nursing, and be permitted to dry, and be again moistened before the child is put to the breast.—VAN ALLEN.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment. When necessary to elucidate the text, illustrations will be provided without cost to the author.

Address the Editor: GEO. M. GOULD, M.D.,
1004 WALNUT STREET,
PHILADELPHIA.

Subscription Price, Including Postage in North America.

PER ANNUM, IN ADVANCE . . . . . $4.00.
SINGLE COPIES . . . . . 10 CENTS.

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in *registered* letters.

Address, LEA BROTHERS & CO.,
Nos. 706 & 708 SANSOM STREET,
PHILADELPHIA.

SATURDAY, SEPTEMBER 3, 1892.

CHOLERA.

IT cannot be doubted that the present danger of a visitation of cholera to this country is greater than has existed for many years. The most recent reports may be exaggerated, and some deductions must surely be made for the extremely hot weather that has prevailed in western Europe; but the existence of the disease in three of the most important ports for passenger-embarkation places this country in far more direct communication than if the epidemic were limited to eastern or southeastern Europe.

All of the methods of transmission of the disease are not known, but it seems certain that persons and personal effects of immigrants from infected localities are likely to convey it. No evidence is at hand to indicate that ordinary merchandise is dangerous. The iron ore, chalk, clay, glassware, and other articles that we receive from Europe cannot be suspected. Even baled old rags, which have been so much condemned, have never been known to convey the contagion, although the opinions of some sanitary authorities have led to a different view among the people.

In an epidemic of this character, the quarantine-service of the various ports is naturally looked to for protection. On every occasion of the appearance of the disease in Europe, an overhauling of these coast-defences has been made, and much occupation has been given to the newspaper reporter in the description of the appliances for inspection and disinfection. Since the outbreak of the last epidemic in this country, about twenty-five years ago, a vast advance has been made in the knowledge of contagious diseases and in the efficiency of disinfectants. Inventive genius has supplemented theoretic knowledge, and apparatus, rapid, efficient, and economic, is now available. The application of steam in a closed space seems to be the best method that will accomplish disinfection with the least injury to the articles, a point that should by no means be left out of consideration.

The health authorities of the Atlantic seaboard are mostly well prepared to deal with the emergency, and while in some ports the facilities for handling and discharging baggage are such that considerable delay will occur, this will not impair the efficiency of the work. Fortunately, cholera is a disease of a characteristic nature, so that actual cases cannot escape detection.

If we except the advantage gained by a more accurate knowledge of the value of special disinfectants, it must be confessed that as regards the limitation of cholera epidemics we are to-day not in much better position than in former visitations. Isolation, general sanitary precautions, disinfection of clothing and discharges will be the principal means to be employed. Intelligent communities will not be likely to rely on tar oils or the aromatic disinfectants, but will employ those that are known to be efficient; and in this connection it may be well to point out that experiment has shown the value of slaked lime as a germicide, and that even strong brine has considerable effect. The former may be used freely, without danger, and is cheap and easily applied. It will probably be of service in the disinfection of discharges.

Without entering on the still somewhat disputed question of the causal relation of the so-called comma bacillus, it may be affirmed that drinking-water is an easy and frequent channel for the extension of a local epidemic, and that in many American cities so little attention has been paid to protecting streams from sewage-pollution, or providing means for the purification of such sources of supply, that serious danger arises from the possibility of introduction of the germs at the upper points on streams

and their subsequent entrance into the water-supply at places further down.

The contamination of the milk-supply is also a danger. The sterilization of all milk is a duty in every household, more especially as this, so far as the comma-bacillus is concerned, is easily brought about. This organism is one of the most sensitive known. According to FRAENKEL, it is killed by temperatures above 120° F. It perishes quickly when dried, and also when associated with large numbers of ordinary water bacteria. To this region and climate it is essentially an exotic plant, and it would seem not difficult to restrict its admission and extension within narrow limits.

We may expect that in the excitement of the moment some unnecessary steps will be taken and some injustice done to commerce and trade, but the medical and sanitary knowledge and methods of the people of the United States will doubtless be found fully able to prevent any serious result.

PROGRESS AND REGRESS IN MATERIA MEDICA.

THE distinct and clearly defined danger that the medical profession runs from the persistent influence of commercial manufacturers of secret preparations is exactly analogized by the pernicious influence of the "patent medicine" syndicates in the drug-business. THE MEDICAL NEWS is clearly of the opinion that the non-medical manufacturer or discoverer of a new drug or therapeutic agent may legitimately patent his discovery, but may not copyright the name only, while keeping the constitution and method of preparation of the article secret. In this manner he will have a proper reward for his energy and outlay of capital. As a profession we allow this right to the unprofessional discoverer, but demand of our own members a still higher standard of morality, in tha we do not permit any physician either to patent a discovery or copyright the name of a proprietary article. This professional magnanimity to others, whilst strictly denying it to ourselves, is a clear evidence of our freedom from dogmatism or hobby-riding.

The profession, however, has a clear duty to perform as regards the action of manufacturers of secret preparations.[1] One by one these men, by fair means or foul, are getting greater and greater control of members of the profession, convincing them by arguments, good, bad, selfish, or corrupt, of the especial excellence of certain products, and dulling the sense of professional honor in making them overlook the fact that these preparations, however cunningly the fact is sought to be hidden, are secret nostrums. Some of these nostrums are, perhaps, excellent preparations, but the secrecy of their origin, nature, or method of preparation throws them out of the armamentarium of the honorable physician, because the physician must have knowledge of what he is using, and guarantees, through his ability to test the preparation, that its composition will always remain identical.

The U. S. Pharmacopeia will not admit secret preparations, because the very purpose of the Pharmacopeia is to establish a standard of strength and purity, and obviously there can be no standard when secrecy is permitted. Pharmacists and physicians thus unite in condemning secrecy concerning medicinal preparations for the reasons given, and in addition because of the fact that only by secrecy can worthless and vicious compounds be pushed upon us.

One by one medical journals have given way under the threat or the bribe of valuable advertisements, or of special orders for thousands of an issue containing an article, and in many of the best and all of the worst there constantly appear articles in praise of these preparations, and in almost none are there manly and frank condemnation of these things. It remains for the medical profession to clearly determine whether it shall have independent and truly professional journals, or whether they shall be the secret or half-secret slaves of the manufacturers of secret preparations.

We are glad to know that this position of THE MEDICAL NEWS is that unanimously endorsed by the PHILADELPHIA COUNTY MEDICAL SOCIETY, the PENNSYLVANIA STATE MEDICAL SOCIETY, the MISSOURI STATE MEDICAL SOCIETY, the AMERICAN MEDICAL ASSOCIATION, and the AMERICAN PHARMACEUTICAL ASSOCIATION.

One thing is clear. It is not necessary to make secret preparations in order to make money; it is not necessary to fly in the face of medical tradition and medical honor to succeed in a purely commercial sense in the pharmaceutical business. This has been demonstrated by the conduct of a number of firms. Moreover, such firms as these conceive it to be good policy as well as duty to aid the medical

[1] A secret preparation is one "of which no working formula is or will be published."

profession instead of coercing it. When a firm, while refusing to make secret preparations, has the largeness of character and nobility of purpose to spend money like water to push original pharmacologic investigations into new fields, to buy splendid books, issue good periodicals, outfit research laboratories, publish exhaustive and expensive works, bulletins, and reports, the weary physician will turn with gladness to such men as his friends rather than to those who, doing nothing for the work of his life, seek to make him a commercial sales-agent for products of unknown constitution.

REVIEWS.

PRACTICAL MEDICAL THERAPY: A BOOK FOR THE FAMILY, THE PHYSICIAN, AND THE DRUGGIST. A POPULAR TREATISE ON THE PREVENTION AND CURE OF DISEASES, AND THE USE AND ABUSE OF MEDICINES. Embracing the Essential Principles of Medical Practice in Accord with the Latest Scientific Research and the Most Advanced Medical Treatment; Setting Forth the Correct and Intrinsic Values of Drugs and Medicines as Curative Agents, and Telling How to Save Life, Health, Time, and Money in their Use; to Which is Added a Great Variety of Valuable Formulas for Medicinal, Toilet and Household Purposes, Receipts for Disinfectants, Insecticides, Hygienic Measures, etc. By JOSEPH A. CONWELL, M.D., Physician and Druggist. Sold by subscription only. Vineland, N. J.: The Conwell Publishing Co., 1892.

THIS book contains so much that is good, pertinent, timely, that it is with profound regret that we find ourselves compelled to say that it contains likewise much that is not good, not pertinent, not timely. Repelled by the pompous pretentiousness of the title-page, we were delightfully surprised to find, in Part I, a series of well-written, concise, sensible essays upon the place and scope of medicine, the merits and demerits of the "pathies," the relations and reciprocal duties of the family physician and his patients, the functions of specialism and specialists, the nature of worthy and unworthy medical practice, the schemes and methods of medical frauds, patent and secret medicines, quack-doctors, and the like. Chapters on unnecessary medicine, imaginary diseases, and popular errors, likewise deserve special commendatory mention. We wish the author had here written Finis, or that he would print a special edition, consisting of this part of the book and the household recipes only. We would then advise physicians generally to see that their patients bought the book. It would do good. Part II gives concise statements concerning "the nature, cause, symptoms, prevention, and cure" of various disorders, arranged alphabetically. These brief statements are of slight value to the physician, and while a few contain useful directions for emergencies, as a whole, this part of the work can only do harm to the lay reader who may attempt to act on its direction, without medical advice. It contains a few lamentable misstatements, such as that concerning tracheotomy in croup, which may be prejudicial. Had the articles been confined to the proper hygienic and prophylactic measures to be adopted under certain circumstances, Part II might have been worthy of Part I, but these matters are not given with anything like sufficient fulness. We trust the author will rewrite the articles from a purely popular standpoint. He has failed only because he has attempted the impossible—to combine popular and technical treatment of his theme in one article. Part III, on Materia Medica and Therapeutics, is more useful, and might, with a little alteration, be allowed to stand for popular information in a new edition. We repeat our regret upon the necessity of making any unfavorable comment upon this book.

We have only commendation for the spirit in which the work has been undertaken, for the lucidity and brevity of its style, and for the matter of that part of it properly belonging in a popular treatise. We doubt not the author has the knowledge and ability to write an acceptable compendium of practice for physicians, but this should be a separate work.

THE WIFE AND MOTHER: A MEDICAL GUIDE TO THE CARE OF HER HEALTH AND THE MANAGEMENT OF HER CHILDREN. By ALBERT WESTLAND, M.A., M.D., C.M. 8vo, pp. xiv, 282. Philadelphia: P. Blakiston, Son & Co., 1892.

A NOTICEABLE point about this little volume is the commendable absence of technical terms, as the author plainly states that it is for the use of "women who are desirous of fulfilling their proper duties of wives and mothers." Too often, in works of this class, the readers for whom they are intended are confused and led astray by the multiplicity of words and phrases meant rather for the practitioner than for the mother.

The book is divided into four parts. The first part treats largely of pregnancy and its complications, and gives some sound advice to those about to marry; it *explains* in a lucid manner the symptoms of approaching motherhood. Several chapters are devoted to parturition and its concomitants.

The second part considers the puerperal state and the relations of mother and infant. The third part takes up the greatest portion of the volume. The care of the child during early infancy is intelligently and fully considered, together with the ills to which it is liable. This part of the work, however, would be the better for a properly-arranged diet-list for the child after it has ceased taking nourishment from the mother.

Part four deals with the menopause. There is an appendix, containing the law relating to registration of births in the United Kingdom, the law relating to vaccination of children, and the law relating to notification of infectious diseases, and there is a well-arranged index.

Altogether the book fulfils the objects for which it was written, and will materially assist the young married woman in the intelligent performance of her new duties.

The Tri-State Medical Association of Alabama, Georgia, and Tennessee will hold its fourth annual meeting at Chattanooga, October 25, 26, and 27, 1892. Quite an interesting scientific program has been arranged.

CORRESPONDENCE.

SOUND AS A THERAPEUTIC AGENT IN DEAFNESS AND TINNITUS AURIUM.

To the Editor of THE MEDICAL NEWS,

SIR: "The man that once did sell the lion's skin while the beast lived, was killed with hunting him."

The attention of the profession was called to the beginning of my labors in the employment of sound as a therapeutic agent in papers presented to the College of Physicians of Philadelphia, April 6, 1887, and to the American Otological Society at its meeting, New London, Conn., July 19, 1887, and by publications as follows: "The Sphenoid Bone; Some of its Possible Functions," *New York Medical Journal*, August 11, 1888; "A Study in Physiological Acoustics: Preliminary Notice," *New York Medical Record*, November 17, 1888; a presentation of results in typical cases entitled, "Otacoustic Treatment in Chronic Deafness," *Annals of Opthalmology and Otology*, January, 1892.

During the month of November, 1891, there appeared at times articles in the lay press entitled "New Way to Cure Deafness;" "Sound Waves in the Treatment of Aural Diseases," by Henry F. Garey, Professor of Otology in the Southern Homeopathic College, Baltimore, Md. The ambiguous phrasing of said publications I considered an injustice to me for two reasons:

1st. That Garey came to Washington on December 17, 1890, with F. C. Drane, dean of said college, to be treated by me.

2d. He had applied *similia similibus curantur* to sound, and with this only and a knowledge derived from me, attempted to deceive the public through said publications by attempting to pose as the discoverer of sound as a therapeutic agent in deafness and tinnitus aurium.

I therefore addressed to the faculty of said college through its registrar a protest against this assumption of Garey, and received a reply substantially sustaining Garey, whereupon I issued a pamphlet giving all the facts, and addressed a copy to each member of The Institute of Homeopathy at their meeting, Washington, D. C., June 13, 1892. No notice was taken of my protests against Garey's attempts at deception, although Garey in his address before that body on "Massage of the Sound-conducting Apparatus of the Ear," said, "Massage of the sound-conducting apparatus of the ear has been used by me experimentally ever since the opening of the clinics at the Southern Homeopathic College in 1891. For several years past it has been settled in my mind theoretically that if it were practically applied it would prove such an adjunct to those cases of adhesions of the 'membrani tympania' and 'anchylosios' (quotations as printed in report; see Baltimore *Sun*, June 15, 1892) of the ossicles, conditions which it has almost been impossible to obtain from the past."

In the paper he gives his date as 1891 (the college opened in the fall of 1891, one year after his visit with Drane for treatment at my hands for deafness by "massage of the sound-conducting apparatus of the ear," or, as I have termed it since 1887, "otacoustic treatment").

In view of the steps taken by me to present the facts in this case, not only to the college of whose faculty Garey is a member, but the presentation by pamphlet to the yearly meeting of this school of medicine, known as the National Homeopathic Institute, they on the day of adjournment (June 17, 1892), through their "Senate of Seniors," which seems to preside over and decide upon ethical questions, made this report:

"We give notice to all concerned that violations of our code of ethics must not be allowed to pass unnoticed if medical associations are to be worth anything. And we would request our medical journals to make known the provisions of the code, so that our physicians may not err ignorantly."

And thus they teach; how different their practice!

J. A. MALONEY, M.D.

1424 Q ST., N. W., WASHINGTON, D.C.

THE EVIL OF THE NOSTRUM.

To the Editor of THE MEDICAL NEWS,

SIR: The letter of Dr. Slifer in the August 13th issue of THE MEDICAL NEWS, on the pernicious effects of testimonials advertising secret and proprietary medicines, brings to mind another form of advertising in which the testimonial does not accompany the package containing the drug, but is sent broadcast in the form of a circular or letter, which usually consists of a fulsome indorsement of the preparation, and winds up with the signature of the indorser, to which are appended his titles, usually with the further fact that he is Professor of Cystoscopy and Prostatitis in the Podunk Medical College. It is evident that the *quid pro quo* in these cases is the advertising that the specialist obtains in having his name brought before the profession. The evil of it all is that preparations of little or no merit are thus foisted upon an unsuspecting medical public. Undoubtedly indorsements have been and are now occasionally given that express honest opinions, but the vast majority of them but thinly veneer the despicable methods of the sneak advertiser.

The profession of this city has recently received a circular letter advertising a proprietary medicine, which, if the assertions of the indorser are true, is deserving of a unique position in our materia medica. We give the circular in full, omitting, of course, the name of the writer and the drug:

"MAY 17, 1892.

"I reiterate my assertion made nearly a year ago, and am daily prescribing ——— with happiest effects.

"In my practice it accompanies the maid from her virgin couch to her lying-in chamber, assuaging the perplexities of maidenhood and easing the trials of maternity with most gratifying results.

"I earnestly hope that the proprietors of this valuable remedial agent will keep it up to its present standard of purity and excellence. —— ——— M.D."

The foregoing letter is apparently free from the methods of the surreptitious advertiser; at least nothing is apparently gained by the writer more than the slight tickling of personal vanity found in the wide circulation of an autograph letter.

A drug that can accompany a maid from a virgin couch to a lying-in chamber is certainly not devoid of power, and it should evidently be prescribed to young unmarried females with great caution. An ecbolic action

is hinted at when we are told of its "assuaging the perplexities of maidenhood and easing the trials of maternity," but we are left painfully in doubt by the concluding words of this sentence: "with most gratifying results." Whether "results" here refers to the maidenhood and maternity that have been assuaged and eased, or whether it relates to successes on other lines, is uncertain. Possibly diseases of men may be included within the curative range of this marvelous drug.

The letter concludes with a hope—born possibly of misplaced confidence—that the proprietors will keep the drug up to its present standard of excellence and purity. After the manner of some they shall not go on assuaging and easing until they have established a reputation, and then suddenly debase their products, thereby filling their coffers with much gold.

We too may be forgiven the pious hope that they will continue to assuage and ease, but we are doubtful of the propriety of accompanying a maid from a virgin couch to a lying-in chamber. We are of the opinion that she ought to follow much of this journey alone, or with only such assistants as the conditions of the case require. To intrude under such circumstances would suggest immodesty, even in the vender of a proprietary medicine. At the risk of being considered old-fashioned and puritanical, we certainly think that "accompanying," in the sense used in this indorsement, ought not to be permitted. Respectfully, MEDICUS.

CHICAGO, ILL.

RÖTHELN.

To the Editor of THE MEDICAL NEWS,

SIR: It was with interest that I took up the NEWS of July 30th and read your editorial on "The Differential Diagnosis of Rötheln, Measles, and Scarlatina." It was timely, inasmuch as epidemics of German measles are becoming common; and hence it is essential that the physician be prepared to recognize the disease when called to a case, particularly as it is acknowledged by recent writers of authority to be a specific, infectious, and highly contagious disease. To one who has not seen the disease in its various phases, a case of German measles may be difficult of recognition. In view of these facts, and with a desire to impart what information I have on the subject, and to emphasize what has already been said, I am led to report an epidemic that made its appearance in our midst during the latter part of last spring. Quite a number of cases came under my observation. Some were seen during the active stage of the disease, and others after this had passed. Upon inquiry, it was learned that the character of the malady was thought to be so mild by the parents that the services of a physician were considered unnecessary; consequently when, as health-officer, my attention was called to the cases, they were found to be without medical supervision.

The disease was confined to the children of four families in the same immediate neighborhood, with the exception of two cases. The parents of two or three of the afflicted families said that their children had been neighboring with a little girl in the vicinity who had a *breaking out*, and that they had *caught* the disease. To quote the remark of one little girl, she said to another: "I'm going to kiss you and give you the disease." To the children the so-called disease was a rash, making its appearance suddenly in the midst of apparent health, and, except in two or three cases, was followed by no untoward symptoms, the little patients keeping up all day, eating and sleeping without any apparent discomfort.

The eruption was upon the face, chest, and trunk chiefly, the extremities sharing lightly in it. So far as our observation extended, the face was the most common seat. The exanthem was most diverse in character. It varied between spots of a light-purplish hue and large blotches, some irregular in shape, others round; and, when abundant, with a tendency to coalesce, a flushed condition appeared. This was more manifest and characteristic upon the face than upon any other part of the affected surfaces. The next favorite seat was the chest. In some of the cases the fading of the rash was followed by a free branny or furfuraceous exfoliation; in others there was no desquamation.

In addition to the eruption the more indisposed had a slight rise of temperature; moderate angina; coryza, more or less pronounced; and decided induration and swelling of the lymphatic glands of the neck, and chiefly those of the anterior chains. The tongue presented a whitish coat.

In no instance was there an unpleasant sequel. There was one relapse; the case assumed its original phase, though the symptoms were somewhat intensified; speedy recovery ensued.

In this epidemic there were no fatal cases. The spread of the disease was prevented by strict quarantine.

L. P. WARRINGTON, M.D.,

CHARITON, IA.

INTOLERANCE TO POTASSIUM IODIDE.

To the Editor of THE MEDICAL NEWS,

SIR: THE NEWS of July 16th contains the report of a case of "Intolerance to Potassium Iodide," by Dr. J. T. Bringier, of Burnside, La.

It has seemed that such cases are of rare occurrence. I will relate my personal experience with the drug, which is more striking than in the case reported. During my school days I suffered with asthenopia, following an attack of measles. Various remedies having been tried without relief, it was decided to try potassium iodide, a then comparatively new therapeutic agent that was being vaunted as a panacea for all the ills to which flesh is heir. The prescribed dose contained about five grains of the salt. After the second dose, coryza set in and became more intense as I persisted in the continuance of the drug, so that a handkerchief would be saturated in a short time. There was pain across the bridge of the nose, as if it were placed in a vise and gradually compressed. Profuse lachrymation occurred, with a severe itching pain in the orbits, pain and ringing in the ears, and a feeling of pressure in the temporal regions. There was also profuse salivation, with congestion of the fauces, pharynx, and larynx. The involvement of the larynx was so profound as to embarrass respiration. It seemed that there was not a bone or joint in my body that did not share in the pain.

The acme was reached on the second night after commencing the ingestion of the drug (which was persisted

in), when it seemed that I suffered the torments of the damned. Sleep was out of the question. By morning the symptoms rapidly ameliorated, and, faithful to my charge, I consumed the four-ounce mixture, but there was no visible improvement of the asthenopia. On another occasion, following the ingestion of two or three three-grain doses of the drug at night, I was aroused from sleep and was obliged to arise to avert threatened suffocation. To the present day I manifest the same or even greater intolerance to the drug.

In my practice I have met with but one marked case of intolerance to potassium iodide.

F. P. BRUNTHAVER, M.D.

DOWLING, OHIO.

OPHTHALMIA NEONATORUM.

To the Editor of THE MEDICAL NEWS,

SIR: The article entitled "A Method of Infection, Treatment, and Prophylaxis of Ophthalmia Neonatorum," in THE NEWS of June 11, 1892, recalls an experience that I had while house-surgeon at Kings County Hospital in 1858.

Purulent ophthalmia broke out in the nursery building, a few hundred yards from the hospital. There were about fifty children inmates, most of whom contracted the disease, notwithstanding the employment of such precautions as were then known and available. The danger of infection from nasal discharges was a number of times demonstrated by accident. It was our practice to have the child held in the lap of the nurse, who also held its hands, while the physician grasped its head between his knees, controlled the eyelids with his left hand, and made the application with his right. Before releasing the child, or during the act, he (or she) would sneeze and blow the virus directly from its nostrils into the eyes of the nurse. In treating one refractory patient the nurse and myself each had an eye inoculated by a sneeze, each feeling the spray touch one eye at the same time. Both of us had the other eye diseased a few days later. The nurse became totally blind in the inoculated eye. I was confined in a dark room for several weeks, and did not recover the full use of my eyes for six or eight months, and have required occasional treatment for granular lids up to the present time.

The local treatment consisted mostly of solutions of silver nitrate, applied with a camel's hair brush, the strength varying from five to thirty grains to an ounce of distilled water. The standard strength, I believe, was ten grains to an ounce. One personal recollection I have was tasting the silver nitrate on the pharyngeal surface of my soft palate soon after its application to my eyelids. A number of times I had pencils of pure silver nitrate applied to my granular lids.

Yours, respectfully,

N. W. LEIGHTON, M. D.

BROOKLYN, N. Y.

NEWS ITEMS.

The Vermont State Medical Society will hold its seventy-ninth annual meeting at Montpelier, October 13 and 14, 1892. The following list of papers has already been secured:

The President's Annual Address, by Dr. C. S. Caverly, Rutland.

"Placenta Previa," by Dr. D. G. Kemp, Montpelier; discussion opened by Dr. C. C. Perry, West Rutland.

"An Analysis of Dosimetry, by Dr. C. W. Strobell, Rutland; discussion opened by Dr. W. H. Vincent, Orwell.

"Cholera Infantum," by Dr. A. E. Moody, Isle La Motte; discussion opened by Dr. George Davenport and Dr. E. Randolph.

"Uric Acid and Urea, Analysis and Significance of," by Dr. George B. Nichols, Barre; discussion opened by Dr. C. W. Peck, Brandon.

"The Influenza as Observed by Me in the Epidemic of 1891–92," by Dr. S. T. Brooks, St. Johnsbury; discussion opened by Dr. M. R. Crain, Rutland.

"Treatment of Minor Injuries to Workmen," by Dr. C. B. Ross, W. Rutland; discussion opened by Dr. C. E. Chandler, Montpelier.

"Some of the Medical Delusions of the Past and Present," by Dr. Edw. R. Campbell, Bellows Falls; discussion opened by Dr. H. A. Crandall, Burlington.

"Injuries to the Intestinal Canal, and their Various Modes of Treatment," by Dr. E. M. Pond, Rutland; discussion opened by Dr. J. N. Jenne, St. Albans.

"McBurney's Operation for Radical Cure of Hernia, with presentation of a case," by Dr. William F. Hazelton, Springfield; discussion opened by Dr. H. Janes, Waterbury.

"Neurasthenia," by Dr. A. J. Willard, Burlington; discussion opened by Dr. H. R. Wilder, Swanton.

"Diphtheria—Cause, Prevention, and Treatment," by Dr. F. R. Stoddard, Shelburne; discussion opened by Dr. C. F. Branch, Newport.

"The Insane Diathesis," by Dr. J. M. Clarke, Burlington; discussion opened by Dr. D. D. Grout, Waterbury.

"The Use of the Curette in Uterine Surgery," by Dr. Albert Vander Veer, Albany, N. Y.; discussion opened by Dr. L. M. Bingham, Burlington.

Paper (title to be announced) by Dr. B. J. Andrews, Burlington.

"Obituary of S. S. Clark, M.D.," by Dr. George Dunsmore, St. Albans.

"Obituary of Joseph Draper, M.D.," by Dr. H. D. Holton, Brattleboro.

The Executive Committee has decided to offer a cash prize of twenty-five dollars for the best original contribution on either of the following subjects: "Summer Diarrhea in Children" or "Treatment of Lobar Pneumonia," by a member of the Society. Papers shall not exceed 1500 words in length, and should be sent to the secretary, Dr. D. C. Hawley, Burlington, Vt., on or before September 15th.

Dr. Irving A. Watson, of Concord, N. H., will probably be present and read a paper on some sanitary subject.

BOOKS AND PAMPHLETS RECEIVED.

Remarks on the Nature and Treatment of Tuberculosis. By E. L. Shurly, M.D. Reprint, 1892.

Camphor-menthol in Catarrhal Diseases. By Seth Scott Bishop, M.D. Reprint, 1892.

Report of the Friends' Asylum for the Insane, 1892. Philadelphia: G. H. Buchanan & Co., 1892.